AMSTRAD COMPUTER USER

95p
October
1985

New Amstrad CPC6128
Detailed Review

Amstrad PCW 8256
Sneak Preview

Cyrus II vs 3D Voice Chess
The Battle in Perspective



WIN - Wally Goodies

WIN - Light Pens from DK'Tronics

WIN - Frank Bruno's Autographed Gloves

Yee Ha Oomph
The Way of the Exploding Fist



Open the fun-door on your 464 with this
HUNCHBACK II
QUASIMODO'S REVENGE
DALEY THOMPSON'S DECATHLON
AMSTRAD-QUAKING
KONG STRIKES BACK!
Quartet from
GILLIGAN'S GOLD
ocean
Ocean Software
Ocean House · 6 Central Street
Manchester · M2 5NS
Telephone 061 832 6633
Telex 669977
ONLY 6·90 & 8·95
GILLIGAN'S GOLD
HUNCHBACK II
KONG STRIKES BACK
DALEY THOMPSON'S DECATHLON
Ocean Software is available from selected branches of:
WOOLWORTH, WHSMITH, Boots, John Menzies, LASKYS, Rumbelows, COMET,
Spectrum Shops and all good software dealers. Trade enquiries welcome.



An Andrew Spencer / elite Joint Production
Previously available only from Commodore U.K. for the CBM64, the author Adrian Spencer and Elite now combine to bring you the 'spectacular'
COMING SOON
International
BASKETBALL
GAME FEATURES
● Furious non-stop action with one or two-player feature.
● Realistic animation with jump, block and steal manoeuvres. You can even jump and turn in mid-air before slamming the ball into the basket.
● Nine fierce skill levels from the utterly pathetic to the Harlem Globetrotter.
● Three fiery opponents with unique 'intelligent player' characteristics.
● Multisection game, with end-of-match presentation sequence.
● Sequel to immensely successful 'International Soccer'.
CBM64 SCREEN SHOT
FLYERS
8
International Basketball is from Andrew Spencer author of the 'Sensational Best-Seller' International Soccer.
Every single 'Elite' product carries the unique 'Elite' Holographic Sticker. Make sure your copy does. It's your guarantee of quality.
Mail Order
Just send a cheque or P.O. payable to 'Elite' or quote your Visa number.
An Andrew Spencer
elite
–Joint Production
Elite Systems Limited Anchor House Anchor Road Aldridge Walsall West Midlands Telephone (0922) 55852 Telex 335622 SPETEL G

SOFT-5011
Issue 11 October 1985

AMSTRAD COMPUTER USER

Regulars

Features

Reviews

Competitions

Programs

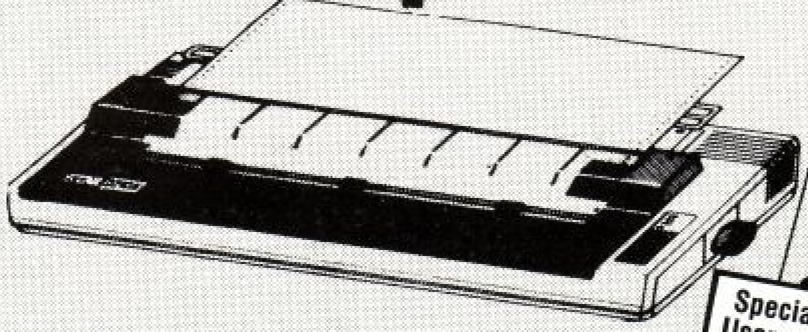
Amstrad User is the OFFICIAL magazine for users of the Amstrad CPC 464 and CPC 664. It is published monthly, the next issue will be on sale from October, 10th 1985. Back issues are available from Amsoft Mail Order at £1.20 each (including postage). Issues 1,2 and 3 are sold out. Overseas readers should contact Garwood Wholesale (0277) 823 747



Amstrad User, 169 Kings Road,
Brentwood, Essex. CM14 4EF
Telephone (0277) 230222

DATA STAR QUALITY
At down to earth prices.

When it comes to printers, whichever way you look at it, we've got the lowest prices, the widest range and the best back-up service in the country.
What you won't get from us, are special gifts, or false promises — just honest value and a fully guaranteed after-sales service.



Special mail order offer to Amstrad User readers. Free printer cable and screen dump cassette (allows you to copy screen graphics onto printer) Worth £23. (Brother-M1009 Printer only)

SPECIAL OFFERS

Brother – M1009 £173.86 + VAT = £199.95
50cps ● bi-directional ● logic seeking ● 96 chars plus international and graphics ● 9 x 9 matrix.

Gemini 10X £189.95 + VAT = £218.44
120 cps. ● bi-directional ● logic seeking ● friction, tractor and roll holder standard ● down loadable characters ● ultra high resolution ● 80 cols. ● IBM PC version available.

Canon PW 1080A £265 + VAT = £304.75
Near letter quality ● 160 cps ● bi-directional ● 96 chars. plus graphics ● 5 print sizes ● 11 × 9 matrix ● 23 × 18 NLQ matrix

COMPLETE RANGE

DOT MATRIX

Canon PW1080A £265 + VAT = £304.75
Canon PW1156A £359.95 + VAT = £413.94
Star Gemini 10X £189.95 + VAT = £218.44
Star SG - 10 £259 + VAT = £297.85
Star SG - 15 £389 + VAT = £447.35
Star SD - 10 £389 + VAT = £447.35
Kaga Taxan KP 810 £259 + VAT = £297.85
Kaga Taxan KP 910 £355 + VAT = £408.25

DAISYWHEEL PRINTERS

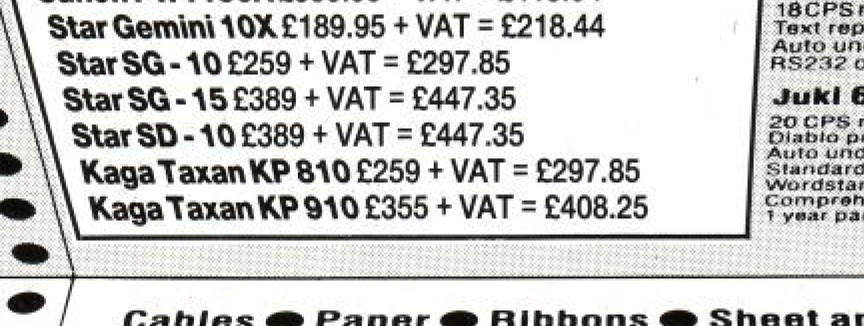
Brother HR15 *Ring for prices*
3k buffer
18CPS max
Text reprinting
Auto underlining
RS232 or Centronics
Subscripts & superscripts
Proportional spacing
Two-colour printing

Juki 6100 *£325 + VAT = £373.75*
20 CPS max
Diablo protocols
Auto underlining
Standard 2k buffer
Wordstar compatible
Comprehensive user-friendly manual
1 year parts & labour warranty
Bold & shadow printing
Subscripts & superscripts

Cables ● Paper ● Ribbons ● Sheet and tractor feeders ● Interfaces

If you have any technical queries or want our latest prices please telephone:

Credit card hot line . . . 01-482 1711



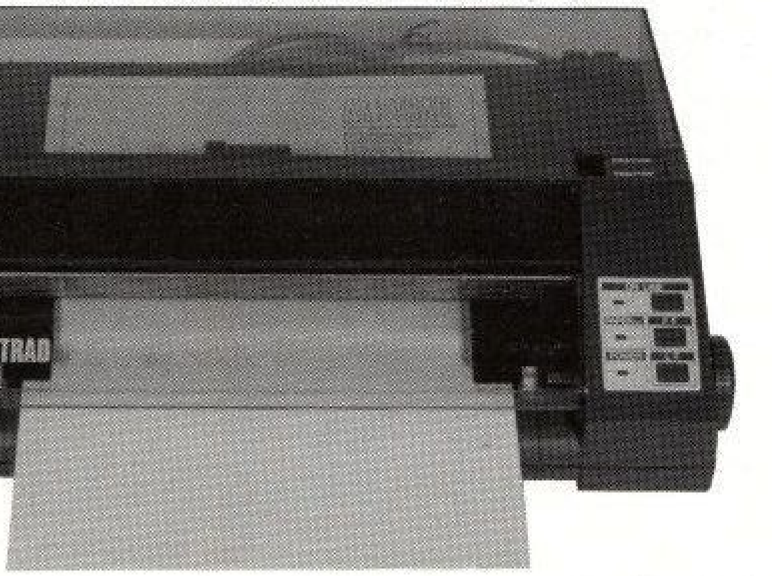
Please add £10 for delivery, we guarantee 48 hour delivery from payment. Personal callers welcome. We're at the junction of Camden Road, near the railway bridge. Anytime 9.00am to 6.00pm Monday to Friday 10.00am to 1.00pm Sunday. Export and dealer enquiries welcome. Post your order with cheque to

Datastar Systems UK

Unicom House, 182 Royal College Street, London NW1 9NN
Telex 295 931 Unicom G   Telephone 01-482 1711

User News...

New DMP-2000 Printer Launched.



Amid the furore of the CPC6128 and PCW8256 launches another new product is the DMP-2000 dot-matrix printer. This is coloured to match the computer's case and has an impressive spec. The standard of printers has improved greatly and the DMP-2000 reflects this. The standard print font uses a 9 x 9 matrix which gives a clear draft mode for listings - with true descenders. The printer is not exceptionally fast, it has a print speed of 105 characters per second (CPS) in its fastest mode but unless you have a huge amount of printing to do this should be fast enough. The unusual shape of the DMP-2000 allows it to sit above a pile of paper, both cut sheet and continuous paper can be used.

The most impressive feature of the DMP-2000 is its Near Letter Quality (NLQ) mode. This produces text which does not look as though it is made up of lots of little dots. If you are used to a DMP-1 you will be amazed by the difference between the two printers. The DMP-1 had two combinations of typefaces, the DMP-2000 has 144 with an option to allow you to download your own character set. Standard Epson control codes are used so programs like Tasword can take advantage of the extra features and the screen dumps in Tasman's Tascopy and Hisoft's Font64 will work on the new printer.

The most spectacular facet of the DMP-2000 is the price. The printer will sell for £159.95 including leads and a comprehensive manual. It's so good you can be sure that not only Amstrad computer owners will be buying them.

Midas Touch

US Gold and their new subsiduary - UK Gold seem to be writing more software than the rest of the computer industry put together. The title from UK Gold is Mexico '86. A combined strategy and action game which has been approved by the football federation F.I.F.A as the offical World Cup computer game. It is a bit early to be telling you about it now since it won't be available until two weeks before the Cup Final begin; however a price of £8.95 has been settled on. US Gold have 14 other titles being written for the Amstrad these are: Raid Over Moscow; a controversial "Bomb the Russkies" game. Bruce Lee; a hybrid of 'The Way of the Exploding Fist' and 'Manic Miner'. Spy Hunter; a scrolling car shoot-em up with some fun touches. Tapper; where you run a bar and have to serve a huge crowd of thirsty customers. Zaxxon; the smooth scrolling space game. Two games based on films; Return to Oz and Goonies. Zorro; a chance to play the part of the black and white bastion of good. Beach Head II; more World War II mayhem. Pole Position; the granddaddy of motor racing games. Up 'n' Down; dodgems let loose in an adventure playground game. Buck Rogers; an interplanetary shoot-em up. Congo Bongo; a 3D multi-screen game. Dambusters; a flight simulator with a mission. And finally Bounty Bob Strikes Back; a huge 'Manic Miner' type game.

Other than that US Gold are not planning to do much for the Amstrad! Some of these titles will be sold as Amsoft Gold programs, some as US Gold and some as both, this split means that most of the titles will be available on both tape and disc. Dates for release have not been set, the first program should be Pole Position.

Linked Learning



Northern Computers, the educational distributors for Amstrad computers, are putting together an impressive new networking system based on the CPC464. They will have 10 '464's on one site linked together and connected to another 8 linked '464's on a second site with the two networks connected by a radio link. The whole lot is connected to a 10 megabyte hard disc which allows users to share and transfer files.

Ariolasoft Casts a Spell

Ariolasoft are to launch a new game called Wizard, this sounds a lot like Sorcery but has 100 screens and a option for players to design their own screens.

Detective Discovers Magic Mushroom People

The software house which produced the 'Operation Caretaker' head alignment program has branched out into games. Their first three programs are "The Magician'Ball", "Old Scores" and "Attack of the Mushroom People".

Magician's Ball is a graphic adventure in which you play the part of two characters. The first is Caro, a sterotype heroic adventurer, the second is Azul a powerful sorceress who proves to be a great help once she has been released by Caro. Together you must rescue the King's daughter from the clutches of the evil magician. Global claim: "The end game sequence is definitely worth adventuring for".

Old Scores is another graphic adventure based around the South Bank of London. The glamorous(?) locations include the Festival Hall, the National Theatre, the IBM Building and the National Film Theatre. In the game, you play the part of a detective seeking to wreak revenge on a rival (settling an old score) and find some missing music (more old scores).

Global Software are a funny lot, whilst the rest of the software houses are arranging deals to tie in with cinema sucesses, Global are re-living the movie disasters of yestermonth, their very own Golden turkey plots. "Attack of The Mushroom People" (do they really have rooms for stuff like that -Ed) is a graphical adventure with about as much corn as the green giant. All it seems to lack is a character in a supporting role who becomes president.

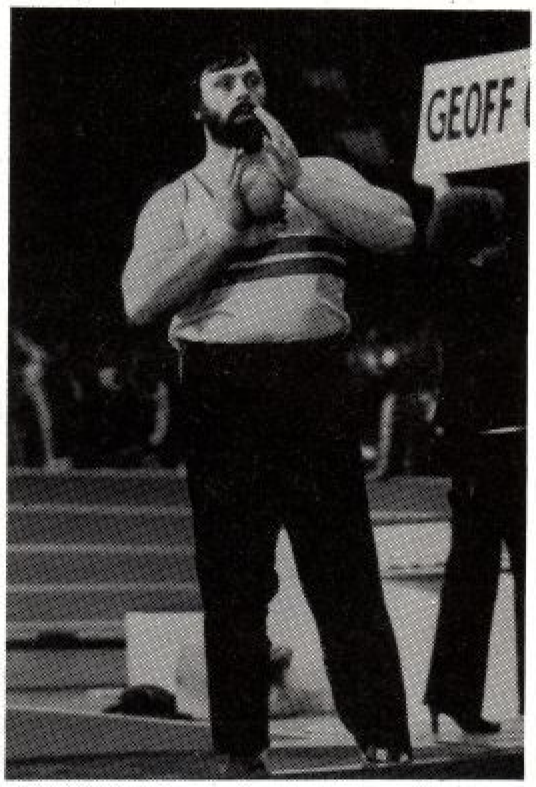
"Magician's Ball" and "Old Scores" are available from the beginning of September, "Mushroom People" will have to wait until mid-October.

Geoff Capes and the Zoids

In a new merchandising twist. Martech have taken a best selling toy and turned it into a computer game. Zoids are toy robots built by the TOMY company, a software house called 'The Electric Pencil' have taken the theme of battling Zoids and turned it into an arcade game for Martech.

Geoff Capes has probably never heard of Zoids but the world's strongest man is to be the star of another Martech program. "Geoff Capes Strongman" is not a "joystick-bashing"game, instead players have to plan training and master timming with quick reactions.

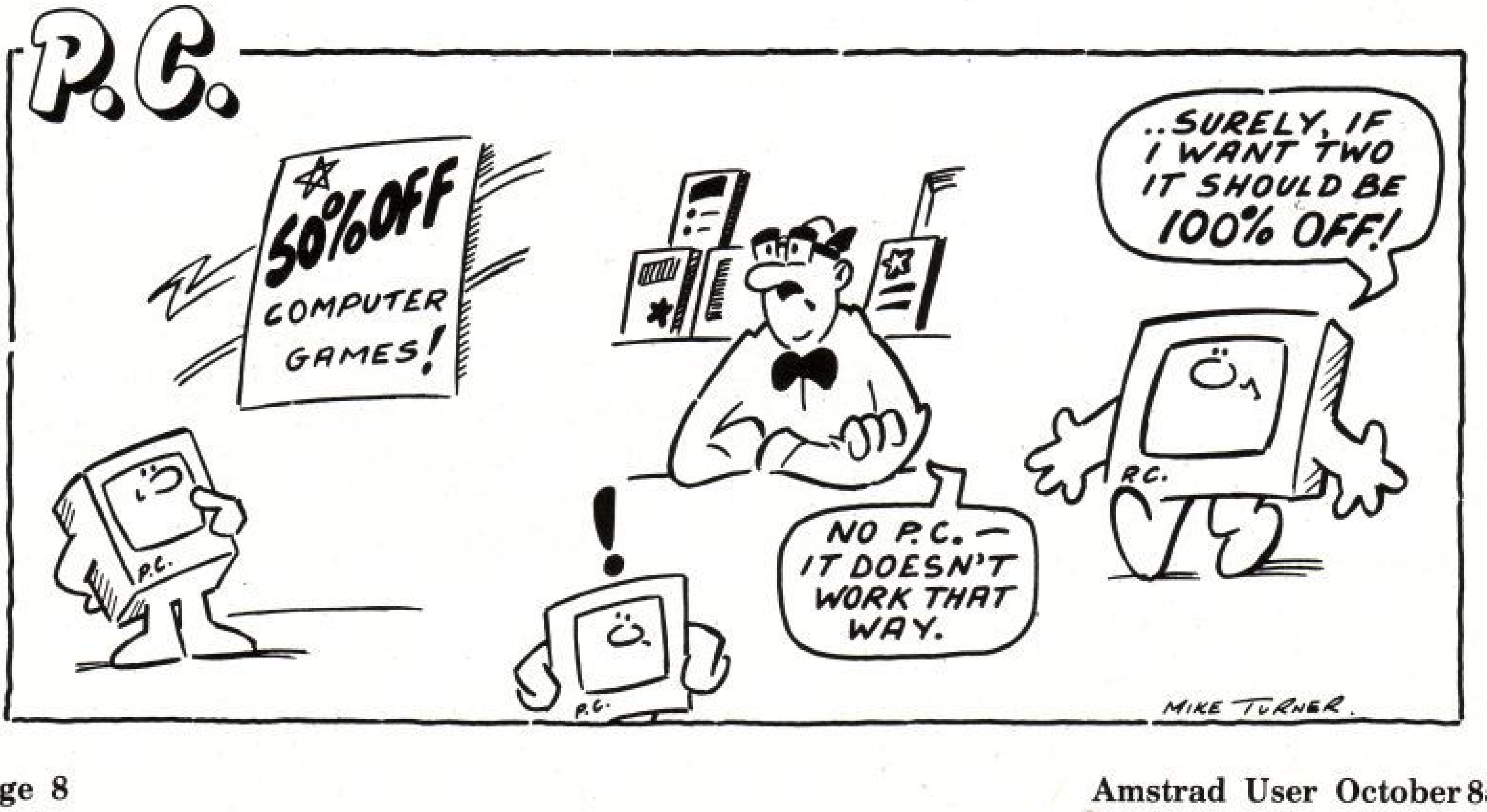




Toil & Trouble

Place software are converting their best selling program 'Cauldron' to run on Amstrad computers. The program is being written by Richard Leinfellner, famous for losing the only copy of a program the day before it was supposed to be launched. Providing he remembers to keep a back-up this time the program should be available in September.

ACU



The Ultimate Winner

In the June issue of Amstrad Computer User we ran a competition to see which of our readers could design the best new room for Knight Lore, well the winner is (cue trumpet fanfare - Ed.) Richard Bessant of Portishead in Bristol. Richard came up to the Amstrad User offices for a test drive and was given the keys to his new trike by Louise Stamper of Ultimate.

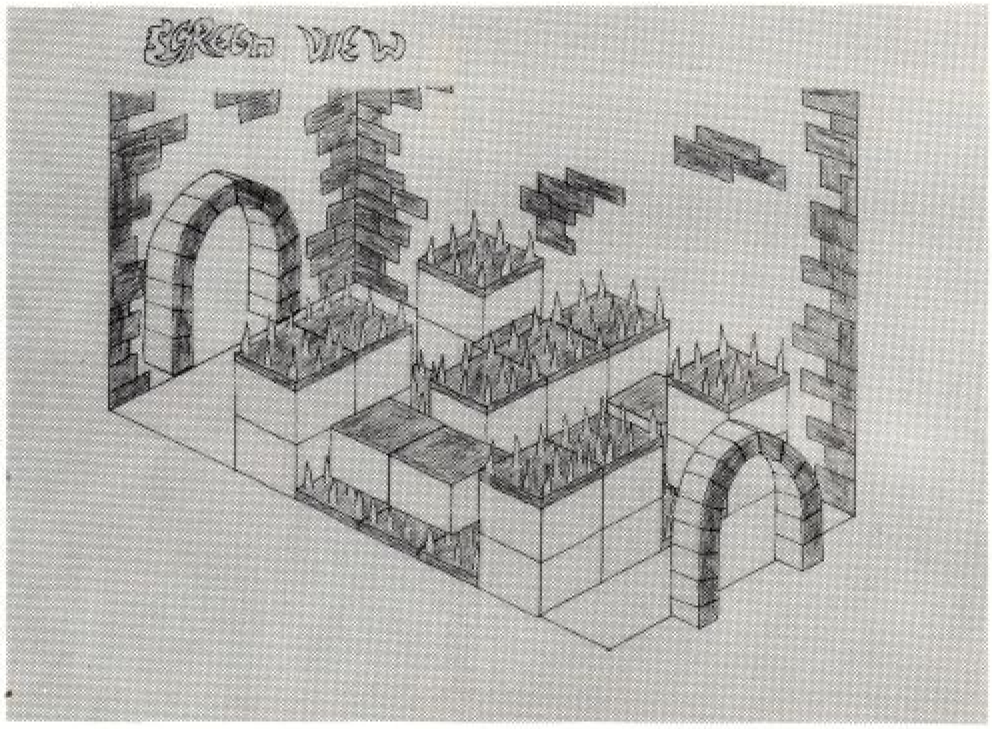
In addition to the C5, Ultimate gave a selection of goodies to the runners up. They included Alan Bramwell from Lincoln, Julian Winstanley from Wigan, Glenn Sims from Stafffordshire, Gary Keegan from Staffordshire, and James Gibson from Skegness.

Richard's design uses a number of moving blocks running over spikes. This was a truly workable design and although Ultimate have no immediate plans to incorporate it in a game, this and all the other designs were shown to Ultimate's programmers. So if you entered, even if you didn't win you may see your design transformed by the magic of machine code.

Entries included shark infested streams, floating balloons, and a variety of nasty aliens. Some people, like Richard included side views and elevations, some just interpereted the spirit of the game.

Richard did not ride home in his C5, Bristol is a couple of hundred miles from Brentwood. If he had started pedaling then he might not have made it home in time to catch this issue of the magazine. Still, we all agreed that it is a fun device and wish Richard well for his travels in it.

Ultimate are famous for being secretive, no-one knows who their programmers are, -except that they used to write arcade games and no-one gets wind of what they are up to until Ultimate want them to. Louise did tell us that the latest Spectrum release, Nightshade, will be converted to the Amstrad, as will the long awaited sequel to Knight Lore - Miremare.



Competition Winners

As you will recall, in the July issue of Amstrad Computer User, we ran a plethora (good word eh? - ed.) of competitions. The prizes included: 25 Confuzion sweatshirts, 2 computer desks from Shinecrest and 3 Star SG-10 printers.

We know that you have all been dying to find out the results so here they are.

The winners of the Confuzion sweatshirts are: Robbin Pink of Portsmouth, M J Abbott of Leicestershire, P Fernandez of Haywards Heath, M R Forsdyke of London, A Higson of Welling, Alan Lawless of Preston, David Brown of Cheshire, Nigel Sharp of Lancing, F P Wells of Dorset, Isabell Davies of Colchester, Stephen Danks of Walsall, A D Higgins of Sheffield, Tom Harkness of Hampshire, R Claxton of Liverpool, Andrew Fry of Cambridgeshire, Margaret Dennis of Cumbria, Kim Sidford of Somerset, Helen Placido of Stirling, Jonathon C Puzey of Bath, Alan G Petch of Hull, John Raper of Co Durham, Andrew Sufrin of Dorset, L Amaan of Oxford.

The winners of the Shinecrest computer desks are Stephen Felton of Leicestershire and Nisar Ahmed of Rochdale.

And finally, the winners of the Star SG-10 printers of Kenneth John Amos of Harlow, Steve King of Edgware and Paul Herridge of Gwent.



RSX Bar Competition

Our spontaneous competitions are certainly proving to be very popular and the second Bar competition in the August edition of Amstrad Computer User was no exception. We found the best and most amusing entries to be those in the form of a story, as our winning entries gave their imagination full swing. Our winners will be receiving copies of Amsoft games. So, congratulations to Phil Hitchman of Essex, Allan Bell of York, Raymond Forward of Penzance, A Mowatt of Dublin, and P J Eva of South Glamorgan.





At last, it's been released!
Dragontorc of Avalon, the chart-topping Spectrum adventure movie is now available for the Amstrad CPC 464 and CPC 664. The story so far – Evil Morag the Shapeshifter has snatched the crown of Dumnovia, struck from the legendary Dragontorc of Avalon, and now only needs the remaining four to gain total mastery of Saxon Britain.

As Maroc the Mage you must challenge Morag through strife torn kingdoms to reach the crowns first and release Merlyn, your old tutor, from Morag's dark spell.

You'll stumble across secret crypts, magic circles of stone and ancient leylines which will be your main route to the crowns. A free map included with the adventure will help you plot your course and a scenario full of clues will prove invaluable in your desperate fight against Morag. But be prepared for Sensory Animation! This programming breakthrough gives lifelike emotions to the many characters you'll meet on your journey. Upset them and any chance you have of reaching the crowns may be dashed forever.

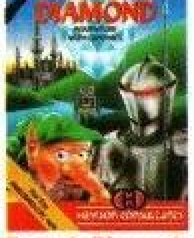


Hundreds of breathtaking 3D locations myriads of creatures and over 200 discoveries to make add up to an adventure that could take you a lifetime to complete!

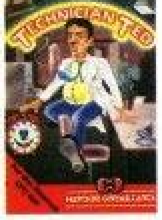


Dragontorc of Avalon – The living adventure movie.
Now available for the Amstrad CPC 464 and CPC 664 – £7.95.
Also available for all 48K Spectrums – £7.95





Fantasia Diamond
Graphic Adventure Amstrad CPC 464 and CPC 664 – **£7.95**
For all 48K Spectrums, BBC Model B, Acorn Electron – **£7.95**



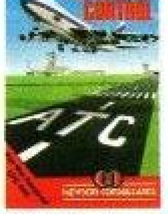
Technician Ted
Arcade Adventure
Amstrad CPC 464 – **£7.95**
For all 48K Spectrums – **£5.95**

GSH

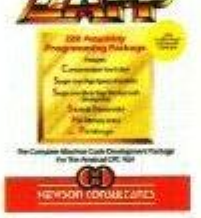
HEWSON CONSULTANTS

56b Milton Trading Estate, Milton, Abingdon, Oxon, OX14 4RX.

For a mail order send cheque/postal order made payable to Hewson Consultants. For credit card sales state your Access/Barclaycard number and enclose a specimen signature. Don't forget to include your own name and address.



Heathrow International
Simulation
Amstrad CPC 464 and CPC 664 – **£7.95**
For all 48K Spectrums – **£7.95**



Zapp
Machine Code Utility
For Amstrad CPC 464 and CPC 664 – **£14.95**

As part of our continuing development of innovative software we are always happy to evaluate programs sent to us with a view to publication.

Whose Show Is It Anyway?

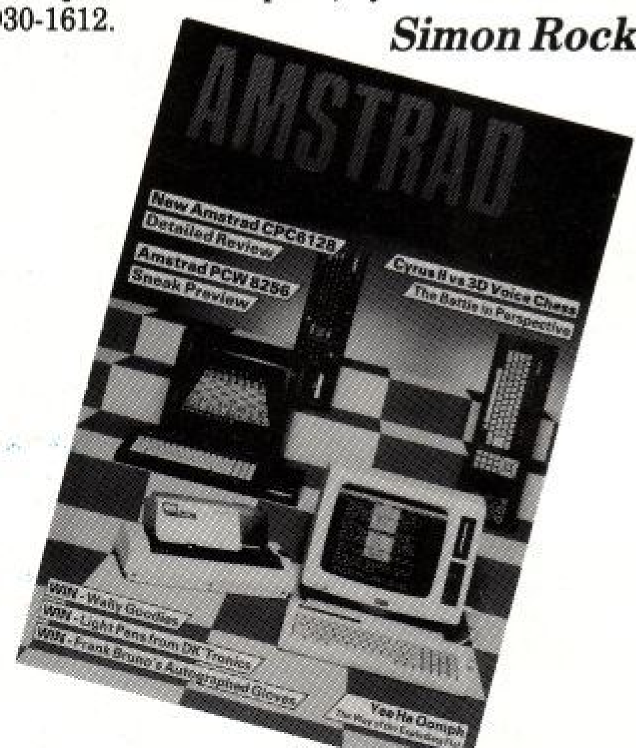
In the past, Amstrad Computer User has declared its independence from Amstrad. I now want to declare independence from the rest of the world.

Amstrad has been very successful and with three computers which all run the same software, just calling them 'Amstrad' computers is much easier than referring to the CPC 464/664/6128 computers, even if the new PCW 8256 does confuse things a little. Companies which produce software, peripherals and who run shows need to tell users that they can buy the goods to satisfy their requirements. What easier way to do this than to use the name 'Amstrad' to describe the products? This leads to a confusion, Amstrad uses the name to describe the products they make and they could insist that no-one else put 'Amstrad' on a box. They can be quite fussy over who does use the name but when you see an 'Amstrad Programming Book' it does not mean that it is anything to do with Amstrad.

The beginning of October sees the first Amstrad Computer User Show, like the books, software and peripherals which are made by independent manufacturers, the Amstrad Computer User Show is run by a separate company, it is nothing to do with Amstrad or the magazine. The show is bound to be a great success and the magazine will have a stand there but it is not the magazine's show.

The show is being run by Computer Marketplace. However, due to problems in the (non-Amstrad) computer industry they are selling the whole shooting match to another company. They have told us : If you have paid them any money you should receive a refund and an invitation to re-book with the new company. Once again the show is nothing to do with Amstrad or Amstrad Computer User, it should be a good show, we will see you at the Novotel. All enquiries should be addressed to Tim Collins or John Jones at Computer Marketplace, you can call them on 01-930-1612.

Simon Rockman



ACU

SUPERCHARGE

SUPERPOWER SIDEWAYS ROM CARD (Ref B101)

This unit opens up a whole new field of personal computing, previously only available to owners of the BBC Micro and other top of the range computers.

The SUPERPOWER Sideways Rom Card has the following features:

- Matching case, with easily detachable cover.
- Fits snugly to rear of computer.
- Bus extension for fitting of Disk Interface etc.
- Houses up to 7 Roms. (Foreground, Background & Extension).
- Any mix of 8K or 16K Eproms.
- No additional power supply necessary.

SUPERPOWER ROM BASED SOFTWARE

CURRENTLY AVAILABLE:

Programmer's Toolbox; Disk User's Utilities; Mailing List & Club Membership; Assembler, Disassembler & Machine-code Monitor.

COMING SOON:

Word Processor; Database....SEPTEMBER
Spreadsheet; Graphics/Statistics....OCTOBER

Rom-based Software has the following important advantages:—

1. Written in machine-code, it is very fast in operation.
2. Programs are instantly available from the keyboard.
3. The program code does not use RAM, thus permitting much larger files to reside in memory, reducing the number of disk accesses and saving time when manipulating files.
4. The program itself cannot become corrupted.

SUPERPOWER DISK USER'S UTILITIES (Ref B103)

Program allows detailed inspection and modification of information held on disk and is of particular use for recovering data from corrupted disks. Individual sectors can be read from and written to. All data can be output to the screen and/or printer. Program also contains a number of functions of use to assembly language programmers.

TABULATE DIRECTORY: Displays directory and enters EDIT mode. READ DISK SECTOR: Read sector and enter EDIT mode. LOAD DISK FILE: Load first sector into buffer and remainder to memory for fast access. Enter EDIT mode. LOAD UPPER ROM: Catalogues resident roms, prompts for rom selection and enters EDIT mode. EDIT MEMORY: Displays current buffer. Data displayed is Buffer Address, Hex and ASCII. Comprehensive editing facilities. 'COPY' key gives Intelligent Data Copy. 'TAB' key gives printer output. WRITE: Write sector to disk. DISASSEMBLE: Disassembles code from specified address, giving address, object code, menmonics and ASCII. Screen and/or Printer output. SEARCH MEMORY: Search sector or a complete file for ASCII string or series of Hex codes. UTILITIES: Includes Format, Hex/Decimal conversions, jump calculations etc.

SCREEN UTILITIES: Select from four display modes; choose background and foreground colours.

SUPERPOWER SIDEWAYS ROM CARD (Ref B101)



SUPERPOWER MAILING LIST AND CLUB MEMBERSHIP PROGRAM (Ref B102) £39.95

SUPERPOWER PROGRAMMER'S TOOLBOX (Ref B104) £39.95

SUPERPOWER WORD PROCESSOR (Ref B106) £39.95

SUPERPOWER DISK USER'S UTILITIES ROM (Ref B103) £39.95

SUPERPOWER ASSEMBLER, DISASSEMBLER & MACHINE CODE MONITOR (Ref B105) £39.95

SUPERPOWER DATABASE (Ref B107) £39.95

SUPERPOWER MAILING LIST AND CLUB MEMBERSHIP PROGRAM (Ref B102)

Program handles thousands of name and address records (label and non-label fields). Twenty classification indicators make possible sophisticated selective examination, counting and printing of records. Alphabetical order is dealt with on data entry, allowing user to select 'key' word. Works with single and double disks as well as cassette.

Main Commands ...
ENTER: Data entry(*) GET: Load new file. COUNT: Selective Count. FIND: Find 'Name' or any String(*). LIST: List current file on screen (*). PRINT: Print label data or whole records selectively. MERGE: Merge and Sort files. SAVE: Write a file to disk or cassette. RESET: Reset colours, label sizes, class definitions, string constants etc.
(*Editing facilities available).

SUPERPOWER ASSEMBLER, DISASSEMBLER & MACHINE-CODE MONITOR (Ref B105)

This suite of routines represents the complete Development Package for the Amstrad Z80 programmer.

The assembler has a sophisticated text editor, a comprehensive set of options, is very fast and incorporates special techniques enabling large source files to be handled in memory. The full-feature disassembler produces files which can be edited and then re-assembled. The Machine-code Monitor routines are extremely powerful, including the setting of conditional breakpoints (including loop counter option), single-step execution, alternative five column binary and mnemonic formats. Both sets of Z80 registers can be displayed.

Other options include Intelligent Move, Modification of code to run at a new address and colour selection of border, paper and pen.

SUPERPOWER PROGRAMMER'S TOOLBOX for the CPC 464 (Ref B104)

ADDITIONAL BASIC

TURTLE: Logo-like turtle graphics. TUNE: Output music string. CIRCLE: Draw a circle. FILL: Fill an area surrounded by foreground colour. GRAPHICS PEN/GRAPHICS PAPER: Set graphics and background colours. COPYCHR: Read a screen charter. ECHO ON/ECHO OFF: Printer output on and off. PAGE ON/PAGEOFF: Paged screen output on and off. CLEAR INPUT:— clear input buffer. (+ extra graphics commands).

PROGRAMMER'S AIDS

EDITOR: Gives 2 additional windows for program editing. FIND (& REPLACE): Find a string and optionally replace. XREF: List references to particular line numbers (GOTO's, GOSUB's etc). COMPACT: Remove REM statements. FRAME: Synchronise screen update with frame fly-back. PRINTER: Epson-compatible or Amstrad printer for dump routines. FDUMP: Fast two-tone screen dump, with user-definition of 'pen' and 'paper'. CDUMP: Shaded screen dump depicting up to 9 colours. PLOAD: Load program saved under 'P' option. INFO: Give details on specified disk file. MEDIT: Comprehensive HEX and ASCII memory editor. LTRON (LTROFF): Send TRACE output to printer. HELP: List commands, functions and their parameters.

ROM-BASED SOFTWARE FULFILS THE PROM

YOUR AMSTRAD.

SUPERPOWER WORD PROCESSOR (Ref B106)

This program incorporates the most useful facilities offered by the best Word Processors currently available on the BBC Micro and other up-market Home Computers.

Text Entry/Editing. User choice of 40 or 80 column mode. Document formatting achieved through use of embedded commands. Text can be formatted and justified on screen, if required. Find <and Replace>with 'wild-card' option. Word count, character count and page numbering reported.

Formatting. Multiple rulers are provided, allowing sophisticated layout of documents e.g. different combinations of TAB stops at different points in the text. All the normal controls are available e.g. page lengths & width, margins, indents, tab stops, justification, headers, footers etc., together with output of control characters to the printer.

Virtually UNLIMITED Document Length. The disk routines in the program handle multiple data files representing parts of a total document, with loading and saving carried out automatically.

Simple Calculator. A calculator window can be called to carry out simple arithmetic calculations. It is also possible to embed a calculation in the text, with the result being calculated and printed on output.

Data Exchange. As part of an integrated suite, the program will be able to handle ASCII files originating from the Spreadsheet, Database and Graphics/Statistics Packages.

Disk/External Commands. Direct Access available.

MANY MORE FEATURES. Ask your dealer for information.

SUPERPOWER DATABASE (Ref B107)

This menu-driven program has been designed to be the most comprehensive and flexible Database which can be achieved in 16K of machine code. Of special note are the PROCEDURES which have been implemented, enabling the more advanced user to write simple structured programs to manipulate the database information in order to meet his more specialized requirements. Databases need not be limited in size since the program contains routines for multiple file handling.

Field types — alphanumeric, integer, currency, floating point, logic, calculated and date.

MAIN FILE COMMANDS
— Create/Modify database structures, reports and procedures.
— Create ASCII file from a Database, enabling data to be passed to the Word Processor, Spreadsheet and Graphic/Statistics programs.
— Copy data to new Database.

RECORD EDITING
— Add, amend, delete, insert, view and duplicate.
— Search and Sort. Due to intelligent file structure and the indexing system adopted, both SEARCH and SORT are extremely fast.

REPORTS
Standard — selected fields may be output, together with totalling on those nominated. (Value fields only). Screen or printer output.

Labels — user-selected fields for printing. User-defined label size, number on sheet etc.

User-defined — user created report-format, combining entered text and designated fields. Editing and storing facilities.

SUPERPOWER ADVICE CENTRES

AVON
K & K Computers, Weston Super Mare 0934 419324.

BEDFORDSHIRE
Chiltern Computers Luton 0582 455684.
Hobbyte Limited Luton 0582 457195.
Zedem Computers Bedford 0234 213645.
DJ Computers Leyton Buzzard 0525 383929.

BERKSHIRE
Gadgets Windsor 07535 67211.

CHESHIRE
Northern Computers Frodsham 0928 35110.
Pyramid Micros Warrington 0925 35713.

CLEVELAND
Multicoloured Micro Shop Redcar 0642 486643.

DEVON
Computerbase Plymouth 0752 672128.
Computer Systems (Torbay) Paignton 0803 524284.
Georges Booksellers Exeter 0392 71072.
Georges Booksellers Plymouth 0752 661011.
Computerware Exeter 0392 210507.
Syntax Limited Plymouth 0752 28705.
Seven Counties Exeter 0392 211211.

DORSET
Seven Counties Dorchester 0305 66022.

EIRE
Bit by Bit Bray 001 868 541.

ESSEX
Clarke Coyston Computers Southend-on-Sea 0702 337161.
Estuary Personal Computers Southend-on-Sea 0702 614131.
Computerama Southend-on-Sea 0702 335443.
Colchester Computers Colchester 0206 47242.
Mirage Microcomputers Braintree 0376 48321.
Computer Centre Hornchurch 04024 75613

GLOUCESTERSHIRE
Screen Scene Cheltenham 0242 528979.

HAMPSHIRE
Electronequip Fareham 0329 230671.
Alton Computers Alton 0420 87998.
Timatic Systems Fareham 0329 236727.

HERTFORDSHIRE
DJ Computers Stevenage 0438 65501
DJ Computers Welwyn Garden City 0707 328435.
Hobbyte Ltd. St. Albans 0727 41396

HUMBERSIDE
Computing World Beverley 0482 881831.
Ashby Computer Centre Scunthorpe 0724 871756.

ISLE OF WIGHT
V M S Computer Centre Newport 0983 525450.

KENT
The Village House of Computers Bromley 01 460 7122.
Microway Computers Rainham 0634 376702.
Marlowe Micros Canterbury 0227 453531.
Adventurer's Guild Gravesend 0474 334008.
Numbus Computing West Wickham 01 777 3160.
MD Micros Crayford 0322 524123.

LANCASHIRE
Computer World Bolton 0204 494304.
I M O Computers Burnley 0282 54299.

LEICESTERSHIRE
Mays Hi-Fi Ltd Leicester 0533 22212.

LONDON
Adams World of Software London N12 01 446 7170.
Vic Oddens London SE1 01 403 1988.
Computers Inc. London NW11 01 209 0401.
G & B Computers London W1 01 580 3702.
Ramco Electronics London NW7 3TG 01 906 3363.

MANCHESTER
Mighty Micro Fallowfield 061 224 8117.
Celcom Systems Manchester 061 834 2808.

MERSEYSIDE
MicroByte Wallasey 051 6306933.
Hargreaves Computers Liverpool 051 525 1782.

MIDDLESEX
J K L Computers Uxbridge 0895 51815.
Screens Microcomputers Northwood 09274 20664.
Trionic Limited Harrow 01 861 0036.

NORFOLK
Abacus Norwich 0603 614441.
Thetford Micros Thetford 0842 61645.

NORTHERN IRELAND
Botanic Computer Centre Belfast 0232 240798.
Fun-cational Computers Lurgan 07622 28543.

NORTHUMBERLAND
Alnwick Computers Alnwick 0665 604816.

NOTTINGHAM
G A Computers Ruddington 0602 211225.
Computer Market Nottingham 0602 586454.
S P Electronics Nottingham 0602 640377

SCOTLAND
Micro Mart Kirkcaldy 0592 206251.

SOMERSET
The Forum Chard 04606 5009.

STAFFORDSHIRE
Leek Computer Centre Leek 0538 387859.
Computer Cabin Newcastle under Lyne 0782 636911.
Town Computer Centre Stoke on Trent 0782 287540.

SURREY
Computerama Burgh Heath 07373 54717.
Computersolve Surbiton 01 390 5135.
Micro Workshop Epsom 03727 21533.

SUSSEX
Gamer Brighton 0273 698424.
Computermania Chichester 0243 779263.
Computermania Littlehampton 0903 716187.

TYNE AND WEAR
Sunderland Computer Centre Sunderland 0783 655711/655736.

WALES
Gwynedd Computers Caernarfen 0286 2610.
Cardigan Electronics Cardigan 0239 614483.
Bucon Limited Swansea 0792 467980.
Teleview Neath 0639 53282.
Cwmbran Computer Centre Cwmbran 06333 60996.

WARWICKSHIRE
O E M Computer Systems Rugby 0788 70522.
Micro City Nuneaton 0203 382049.

WILTSHIRE
Barbury Computers Swindon 0793 611487.
Trowbridge Computer Shack Trowbridge 02214 67299

YORKSHIRE
Micro Power Leeds LS7 0532 458800.
Danum Computer Systems Doncaster 0302 20355.
The Computer Room Barnsley 0226 204000.
Just Micro Sheffield 0742 752732.

DEALERS. Become a SuperPower Advice Centre and help us promote your expertise in home computing, with particular reference to the Amstrad market. Contact Eileen Garfield on 0532 434006 for details of our dealer support package.

HOW TO ORDER

Phone or write to: The SuperPower Project Office, Micro Power Ltd., Northwood House, North Street, Leeds LS7 2AA. TELEPHONE (0532) 434006.

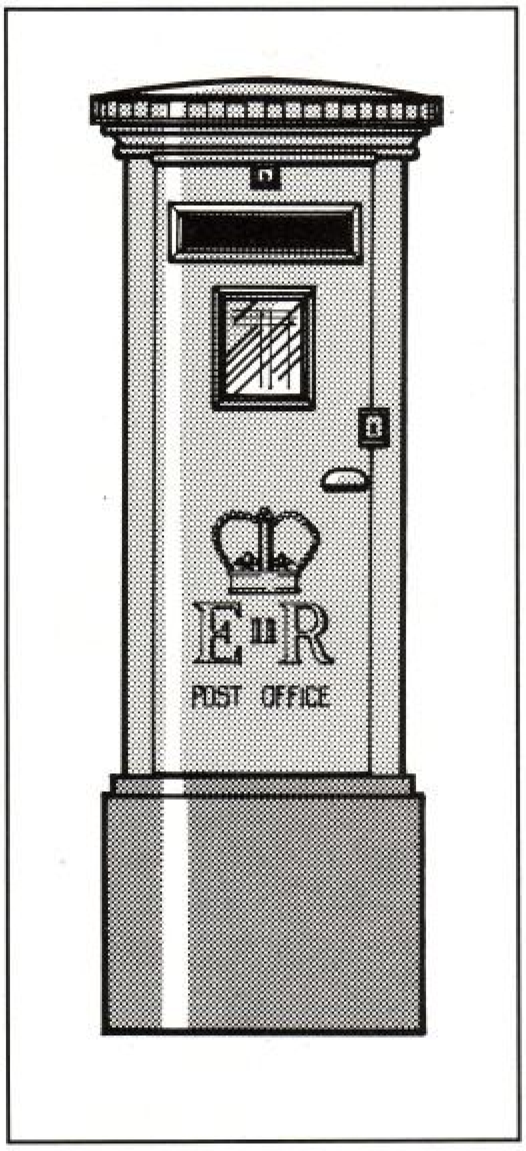
SUPER POWER

SERIOUS SOFTWARE FROM THE MICROPOWER ORGANISATION

SE OF YOUR AMSTRAD.

Please bear in mind that the views expressed herein are not necessarily those of Amstrad or Amsoft. Be assured that all your views are given thorough consideration. This letters section is the Amstrad Computer User's own forum.

Write to reply



Expansion ROMs for the Amstrad-The WHOLE story!

On reading the article submitted by Peter Green in the last issue of ACU, I was faced with two choices. Since I received my voucher copy prior to public distribution, I could have sought legal advice, with the object of obtaining a high court injunction preventing publication, on the basis that the statements therein are false, possibly libellous, and certainly financially damaging to my company.

However, since ARNOR is rich in expertise, but much poorer in cash terms (than AMSTRAD), my colleagues have scraped me off the ceiling and I have decided to accept "WRITE TO REPLY".

ITEM 1: Earthing & The Disc Drive.

There are two ground connections from the 464 to the disc expansion. They come from different parts of the printed board inside the 464, they are connected but there is some sort of high frequency effect. Some disc expansion units have an extra ground wire fitted from one of the two ground pins to the edge of the disc expansion board-clearly done for a reason.

This all serves to correct a very obscure hardware fault in the 464. It came to our attention when early AD1s (MAXAM boards) caused a problem with the disc, specifically CP/M. In fact, a simple cable from the expansion port to the disc can cause the same problem. More, it is rapidly becoming clear that if the data bus to the disc interface extends more than about an extra inch, the same problem with CP/M starts again. Luckily we found a simple solution-CUT ONE EARTH LEAD - end of problem.

ITEM 2: ROM Selection.

Peter Green's OBSERVATION of an "obscure incompatibility" is of course correct, but his DEDUCTION that ARNOR is somehow to blame is wrong, any item placed in front of the Micro Power board will cause problems, moving the AD1 to behind the Micro Power board would solve his problems.

ITEM 3: ROMS on their own.

This is the really damaging editorial. Until August 1st the MAXAM ROM was only available in the AD1.

The implication that we sell "scrambled ROMS" on their own is frankly DAFT (as well as damaging). The irony is that in the same issue, we have announced the arrival of all three of our ROMS separately - to fit ANY ROM board - as well as the ARNOR/HONEYSOFT system. We will sell fast EPROMS (To suit the MICROPOWER system in particular) and we will even provide you with a link for their board.

Final comments - Well, I just wish Peter Green would stick to software reviews. and avoid damaging sweeping statements which are either incorrect or misleading.

D.J.Fisk B.A. (OXON)
Managing Director, ARNOR Ltd.

ACU: We too are fans of Arnor products, the confusion over getting Maxam to work with the other Rom boards stems from the lack of other peripherals to try. When the review was written the Roms were not available on their own.

Amstrads in Poland

In my work, I often deal with graphical form of information eg. microscope photographs of particles. This can be easily processed by the 464 provided there is a method of inputting graphical information into the computer.

On my VIC-20 I used a self made digitizer with two potentiometers using paddle inputs of the VIC.

Apparently on the 464, such facility is missing. I therefore ask if there is any device available on the market which could be used with the 464 for such graphical input. For example, if Koala Pad can be adapted for the 464.

By the way, there are already four of us with 464's here in Lodz and three more will join soon so we are thinking about creating a User Club.

Dr. Z. Pakowski
Lodz, Poland.

ACU: A digitising pad is available for the Amstrad from British Micro, they can be contacted at Penfold Works, Imperial Way, Watford, Herts, WD2 4YY Telephone (0923) 48222

Delete With Nothing

I am in the middle of planning out a new game I am making called "Police Chase", but I have come across a bug. The game is a graphical board game of a chase. The problem came when I tried to move the cars. I put the computer into transparent mode and plotted and drew out the road, but I could not produce animation because when I tried to rub out, everything was left all over the road. Please could you tell me if it is possible to rub out the previous picture to produce animation without destroying the road. I tried to use the windows but this does not give a 3D effect. If it is possible to rub out a UDG on a drawn and plotted road please could you tell me how. I would be very grateful. Otherwise it will be back to the drawing board.

David Gibbon
Beardark, Co. Durham.

ACU: What you have found is not a bug, the machine is doing precisely what you are telling it to. Unfortunately, this is not what you want it to do.

As you are in transparent mode it is not surprising that it does not wipe out the old character since you are just overwritting the character with nothing. As I understand it, what you want to do is to be able to wipe out characters without wiping out the background. This is tricky.

The easiest way of doing it in BASIC is to the graphics mode to XOR by using PRINT

CHR$(23)CHR$(1);, then use the TAG command to link up the text and graphics cursor. Use MOVE X,Y to position the cursor and then PRINT your UDG. Do not print blank lines etc. as they will come up on the screen as strange characters unless you use TAGOFF first.

Printing the same character in the same place using the same method will now wipe the old one out. Cunning eh?

This works best when you use a background of ink zero. Using other background colours causes the colours of the UDG to be modified. The way it does this is predictable if you understand XORing but that could fill another letter and I hope the advice I have given will help a bit.

Helpful Pride

A number of people have written to us asking our advice on tape loading problems with the new Amstrad CPC 664.

The problem is caused by the incorrect wiring up of the cassette lead so that the computer does not stop the tape between program parts and misses the start of the next block. The situation is not helped by the fact that the CPC 664 user instruction manual contains an error on chapter 7, page 39 where the tape socket and stereo socket pin outs are reversed.

The cassette recorder should be the sort with a remote socket and the 5 pin Din plug should be wired as follows:

EAR	pins 2 & 4
MIC	pins 2 & 5
REM	pins 1 & 3

If Amstrad had provided a lead with the computer the problem would not exist.

Steve Thomas
Software Manager
Pride Utilities Ltd.

ACU: *Would all 664 users want a casette lead?*

In The Club OOp North

Whilst visiting my local computer centre my friend and I asked about a local club for the Amstrad CPC 464. The reply was that no club existed in our area. Humberside area.

Therefore I ask you to print in your magazine our names and address, so anyone wishing to form a CPC 464 Amstrad Club to contact either my friend or myself.

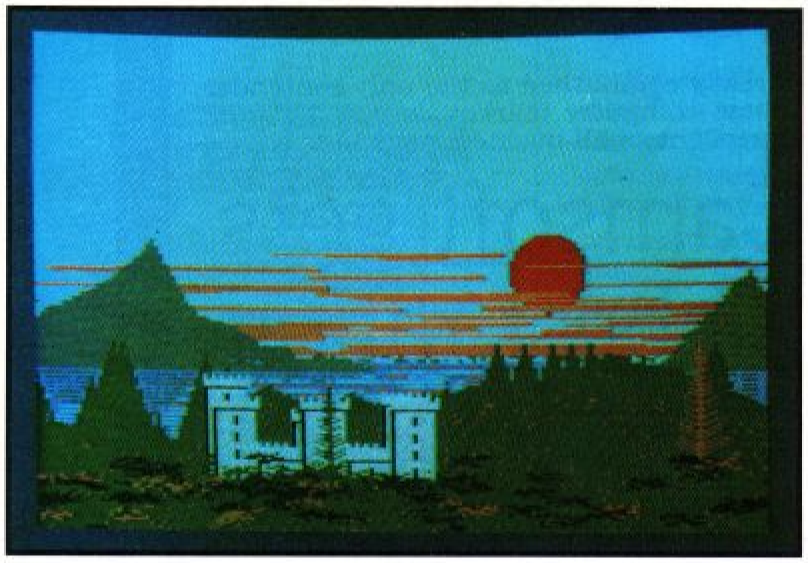
6. Lidgett & S.A. Blackley
54, Fairmont Crescent,
Scunthorpe,
Sth Humberside,
DN16 1EJ.

ACU

LANDSCAPE CREATOR

by Brian James

This type of exercise helps to demonstrate the sheer power and versatility of the Amstrad.



These pictures were produced by the Landscape Creator, a machine-code program which uses mathematical methods to create detailed coloured landscape views, quickly and spontaneously. The program was designed specially to take full advantage of the excellent graphics on the AMSTRAD machines. I set out to simulate the idea of artistic creativity; the program makes its own decisions about all the variables relating to the sky, mountains, vegetation, lakes, islands, buildings, and then draws the picture.



The sheer number of variables chosen by the program means that the resulting scene gives endless, unexpected, surprises with a wide range of possible colour schemes.

Generally speaking, very little "Computer Art" is actually generated by a computer. In nearly all cases the computer is used as a new medium for drawing, with the computer not actually contributing to the creative process. There are nice graphics packages which make it much easier for the operator to control the results on the screen, but the process is still quite time consuming.

This new approach, which has been a very interesting challenge, is for the program to create its own pictures, using mathematical methods to create the shapes, textures, and arrangements. The program requires a "knowledge" of the subject to be portrayed, i.e. a set of rules about what is a reasonable range for every variable. Not just that, but sets of probabilities for each decision the program might make.



You will have seen excellent colour graphics in many Amstrad games. Usually these graphics make extensive use of "user defined" characters, which are rectangular elements (usually 8 x 8 pixels) used as building blocks. In contrast to this, the use of mathematical functions and probability theory allows us much greater flexibility, enabling the spontaneous creation of different shapes, giving endless surprises, even to the programmer.

The simplest form of spontaneous art might rearrange a number of graphic shapes - say to rearrange the positions of a man, a dog, a house, and a tree. But this would soon get boring. To simulate the illusion of "creativity", we have to use a whole hierarchy of subroutines, which build up the scene from the smallest possible elements, with computer decisions at every level of organisation. In this way a colossal number of arrangements is possible. The possible variations can provide visual effects which will give lasting



pleasure, and every time the program is run, a different series of pictures is created.

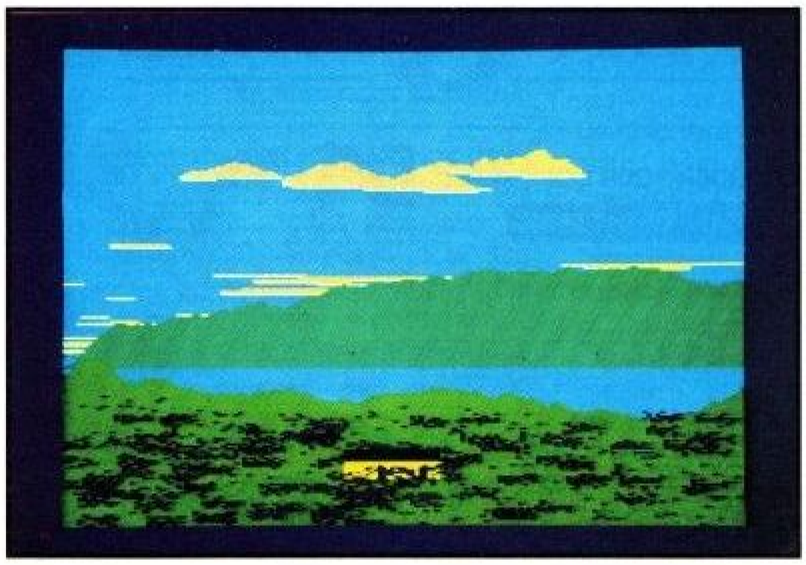
My objective in the Landscape Creator was to have the maximum variety of pictures without contradicting some fundamental facts about landscape structure. The number of calculations involved is astronomical. Just doing a single pixel involves over 50 machine code instructions. Amstrad Basic is very comprehensive and quite fast, but the Landscape Creator has so many calculations to do that machine code is essential. The Amstrad Firmware manual gives the addresses of in-built machine-code routines for plotting. These are easy to use and nicely

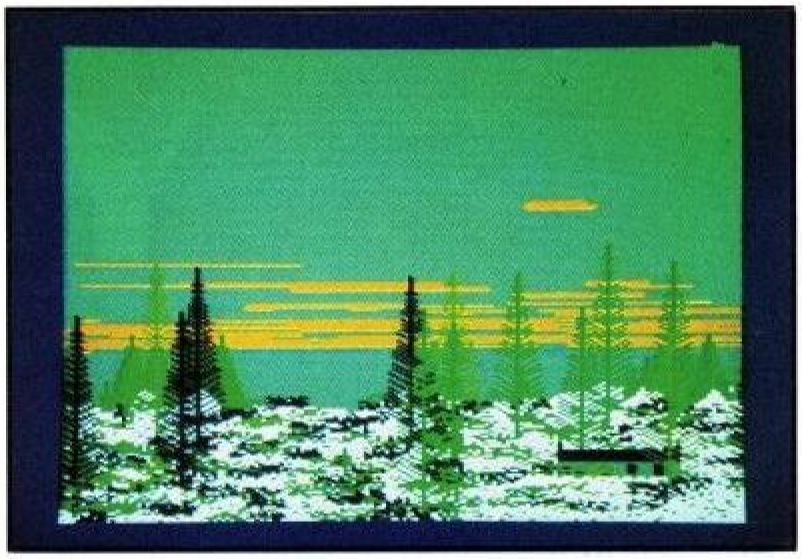


crashproofed, but the Landscape Creator has its own, even faster plotting routines. Also the arithmetic routines were designed for compactness and speed.

The Amstrad has an excellent set of colours for landscapes. Sixteen colours at one time on the screen - chosen from a magnificent 27. Distant hills might be a mysterious grey or light blue, while the foreground might have much brighter colours with yellow or red flowers. Foliage can be a dark green or a bright green. Water can be a mixture of colours reflecting the hills and sky beyond. A white castle looks very smart against rough green forests or black rocks.

The precise formulation of the fundamental rules of a landscape is a subjective process depending on the geographical area (or planet) and also depending on the eye of the beholder. This is where the human element comes in - and the inspiration for this task came from the Highlands of Scotland and also the English Lake District.





A tremendous advantage of Amstrad graphics is that any pixel can be any colour. You can have 16 colours on screen in Mode 0, with a resolution of 160 pixels horizontally by 200 vertically. For better resolution, Mode 1 gives you 320 horizontally , but only 4 colours. I chose Mode 0 with its much greater range of colours. When I want better resolution horizontally than vertically, I turn the monitor on its side, and swap the x and y axes. Whatever mode you select, any pixel can be any of the available colours. This gives enormous freedom compared with most home computers. When foreground features are drawn they have no interfering effect at all on the background colours.

The real beauty of the idea is that you can sit down and relax and enjoy this kaleido-strad of scenes as the Landscape Creator takes you on a voyage of visual delights. For a



change you don't need to push any buttons at all. It is an exciting, hi-tech art form which doesn't interfere with conversation like the telly does. And, every time you run the program you see a new set of pictures. If you take a photograph of a particularly striking view, the probability of someone else getting that same view is incredibly small - 1 in 1000 million - so in practice, your picture is unique.

I am producing the Amstrad Landscape Creator doubly recorded on cassette, or a disc version (for either 464 or 664). Send £5 for the cassette version , or £9 for the disc version, to: G. Brian James, 21 Lamond Place, Aberdeen AB2 3UT, Scotland.

ACU

DOMARK

presents

YOU as . . .



A VIEW TO A KILL
THE COMPUTER GAME

Now you are
James Bond
in his first arcade adventure
Available now on
Amstrad

© Eon Productions Ltd. Glidrose Publications Ltd. 1985
Domark Ltd., 204 Worple Road, London SW20 8PN. Tel: 01-947 5624 Telex: 894475 G

ORDER YOUR COPY NOW!
CALL 01-947 5624

DOMARK

To: Domark Ltd., 204 Worple Road
London SW20 8PN
Telex: 894475 G

NAME: (BLOCK LETTERS) ....

ADDRESS..............................

COUNTY ....POSTCODE..............................

Please send me .... copies of "A View to a Kill – The Computer Game
at £10.99 (includes postage and packing).

I enclose a cheque/P.O. for £..............................

My computer is: ....

You may order by Access ☐ Visa ☐ American Express ☐ by post o
telephone (01-947 5624).
Please debit my CREDIT CARD ☐ Signature:..............................

Account No: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiry Date: ....

HISOFT C

Note: The author of this article was also involved in the production of the manual for Hisoft C, but promises not be obviously biased.



C — IS For Comqter

Amstrad users are very lucky. We've always had a great machine which is being taken seriously by a lot of very important people, but now there is a product for the CPC464 and CPC664 which, more than almost any other single software item, brings it credibility on a grand scale. The product is a Unix-compatible C compiler, written and sold by Hisoft.

Why is C such an important product? Although the C language has been around for almost fifteen years now, it has only really taken off in the last couple of years. The main reasons for this are: 1) it is very trendy, and 2) it is the basis of the multi-user multi-tasking operating system, Unix. Hisoft's C is substantially compatible with the standard C compiler which is supplied with all Unix systems. This does not mean that someone somewhere is going to move the Unix operating system across to the Arnold, but it does mean that programs written with the Hisoft C compiler are very likely to compile without alteration on these other (very expensive) C compilers.

This has two advantages for the Amstrad owner. It means that he can develop programs on his machine and use the knowledge gained in doing so as the basis for a career in systems programming on much larger machines. At the same time, it means that almost all the books written about C, and almost all the programs published in the language, can be applied to or run on the Amstrad.

Let's look at the C language and see why it has suddenly become so popular. First of all, it is the ideal language in which to write systems programs in. A system program is one which interfaces between the low level of the computer, such as the screen drivers and disc interface, and the applications program, such as a word processor or a game. An obvious example of a systems program on the Amstrad is its operating system. The operating system deals with all the arduous things such as printing to the screen, writing to and reading from the cassette and discs, and making the sounds and noises which the Amstrad is so capable of.

C is particularly good at this sort of thing because it places constraints upon the programmer. In much the same way as assembler, the C language lets the programmer get hold of any aspect of the system, no matter how low level it is, and do with it what he wishes. More importantly, perhaps, the C language has no built-in routines to deal with input and output.

This may seem rather silly at first, but it has enormous advantages over languages like Basic, but things like PRINT and INPUT are built-in parts of the language. C deals with I/O (input/output) by having a set of standard library functions which do things like read data in and write it out.

As these functions are part of a library rather than part of the language itself, they can be tailored to run on any machine without having to play around with the actual compiler, or producing yet another dialect of the language which does things in a different way. After all, consider just how many different versions of the Basic language there are, and then consider how differently they handle things like printing and inputting data. Horrifying, isn't it?

C doesn't have this problem. There is, in theory and very nearly in practice too, one version of the language. Every real C compiler will come equipped with standard things like while loops, switches and case statements, and structures. Don't worry about these terms - they'll be explained later on. The input and output routines, as they are part of the 'standard' library, can be configured to work in exactly the same way on each machine they appear on.

In the case of Hisoft C, this means that you could write a program on the Amstrad, and watch it run in just the same way on a ZC Spectrum, a CP/M machine, and so on. If you think that this is wonderful, as you intend only writing programs for the Amstrad, don't worry. C has advantages for this sort of application, too.

Its advantages over Basic are that it is compiled, which means it runs faster and takes up less space in the machine and that it is more versatile. No matter what you think of Locomotive Basic, it can never be considered as powerful a language as C. This is because C can do more things than any Basic could ever hope to achieve.

Its edge over other compiled languages, such as Pascal, is again this concept of a 'powerful' language. Pascal compilers, by definition, will not allow you to play around with data with the same wild abandon as a C compiler will. It tells you off if you try to access an element of an array which doesn't exist. C doesn't, because it may well be that the entire array is notional anyway, and you've only introduced it to the program because it is the easiest way of deaing with the problem you want to solve. Okay, this certainly means that the C programmer has to be far more responsible and much more in tune with what is being done, but you can see why programmers have taken to it so completely.

C's lead over assembly language programming is that it is block structured, and far easier to write and debug. A block structured language is best expressed as one which allows you to write programs in modular fashion. True, this could be done in assembler by writing everything as small subroutines, but if you do this you quickly lose the advantages of programming in assembler anyway.

C does share one problem with assembly language programming, though - it can easily become unreadable. As an example, take this segment of a typical C program:

```
level0(p,num)
struct term *p;
int num;
{
struct term *q;
q=p
while (p-q<num)
{
```

```
if (p->op_t==OPERT)
{
if ((p+1)->op_T==OPERT || p==q)
{
if (p!=q) ++p;
switch (p->elem)
{
case S_ADD: break;
case S_SUB: (p+1)->elem = -(p+1) ->elem;
            break;
case S_NOT: (p+1)->elem =  (p+1) ->elem;
            break;
default    : exprerr=ERR_MOND;
            return;
}
p->op_t=NULL;
}
}
++p;
}
}
```

What on earth does that do? I don't know, either!

The thing is, to get the best out of C, you do need to adopt the idiom with some amount of gusto. This involves the use of strange operators, odd-looking expressions and initially unfamiliar concepts. Things can be helped a great deal by spreading comments liberally around the program, and using sensible names for variables and functions. For some reason, though, wide use of comments seems to be the antithesis of good C programming.

The only concepts which really need to be understood well by a programmer who decides to delve into C are pointers and the fact that every expression, even assignment expressions (equivalent to LET statements in Basic) has a value. This latter part means that if we put a value into a variable,

```
variable=value:
```

then the expression 'variable=value' has the value 'value'. That isn't too difficult to get to grips with. Pointers are another matter, and it really isn't appropriate to go into great detail here, but essentially a pointer is a variable (more correctly, a value) which points to another variable. Seems pointless? It isn't as it makes such things as dealing with arrays and other complicated data structures far more simple and concise. As an example, suppose we had an array pointed to by S, which is full of values which we want to transfer to another array called T. To make it even easier, let's suppose that the last value we want to move is a zero. Dead simple, John:

```
while (*t++=*s++);
```

And that's all you need to say. It may look a little obscure, but it's a typical example of C-speak which even the novice C programmer will soon find himself getting to grips with.

Now, let's get back to Hisoft C on the Amstrad. At the moment, two versions of the compiler are being sold. They are both identical, but one comes on cassette and the other on disc. The cassette version costs £34.95, while the disc version costs £39.95. Remember that an equivalent product for almost all other machines will cost well over £150. For example, the most popular C compiler on the IBM PC, which is very nearly as good as Hisoft's C compiler, costs a mere £400.

For your money, you get a cassette or disc, which can of course be backed up for security but not for ripping off, and a hefty (and extremely well-written!) manual which deals with such subjects as the integral line-based screen editor, the use of the compiler, the fundamentals of the C language itself, and the numerous libraries of useful routines which Hisoft provides with its compiler. These libraries include the standard C library, which deals with all the normal C functions you expect to find, such as fopen, printf and isupper, and the dedicated Amstrad libraries to deal with graphics, sound and event handling. Anything which you can do in Basic, and almost everything which you can do in machine code, you can also do (more efficiently) in Hisoft C.

The program is loaded and run in standard fashion, with a line such as:

```
run"hisoft-c
```

and this invokes the compiler, enters mode 2 (80-column mode) and begins the editor. This editor is part of the compiler itself, and is much like the one provided with the Basic interpreter. It has a lot more features, though. Apart from simple things like renumbering, deleting, inserting and moving lines, you can save files, read files in, find and substitute strings, list files to the printer and so on.

Although the editor provides line numbers during an editing session, these line numbers are for the user's convenience only. C compilers have no concept of lines or line numbers, so the numbers are not saved when the file is put out to tape or disc. Once a file is in memory, it can be compiled by leaving the editor and 'including' the file in a compilation. This is done with a special case of the 'pre-processor command' #include, which normally directs the compiler to read in the named source file as part of the compilation. If no filename follows the directive, the file currently in memory is compiled. This can contain further #include commands, therefore bringing in header files and the library files.

Hisoft C is unusual in having the library files present in source (pre-compiled) form, which makes it very easy to alter certain functions to your particular needs, or to add further functions as you progress. It also obviates the need for a linkage editor, as there are no files to link. The end product of a compilation is a ready-to-run program, which may be run in situ or saved to disc or cassette to be run as a normal machine code program later on. The result of a compilation may also be sold in its own right, of course, and Hisoft asks for no more than an acknowledgment of its compiler's involvement in the production of the software.

One of the most interesting features of the Hisoft C compiler is its 'direct mode' capability. This allows you to test out functions, modules or complete programs as you proceed, much as you can with interpreted Basic. Normally, a C program needs to be fully compiled before it is debugged, but the direct mode allows you to test each individual function as it is written.

The C compiler follows the Kernighan and Ritchie (they wrote the language in the first place) standard very closely, incorporating almost all the features of the language detailed, plus a few more which have been added since the book was written. This means that all the really useful parts of C, such as structures, unions, conditional expressions and so on.

One thing that is not present at the moment is the float data type. This means that floating point numbers cannot be used, but in practice this is far less of a disadvantage than it may seem. Hisoft intends to include floats fairly soon.

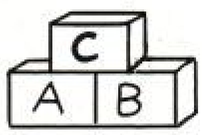
The file handling is very standard C, using the fopen() function to open files the and fclose() to close them. Reading and writing are done in the normal ways with functions like getc(), putc(), fgets and fputs.

As a test of the compiler, I typed in a long program which had previously successfully compiled on both the Sinclair Spectrum and the IBM PC. It compiled and ran without the slightest alteration, I'm glad to say, and subsequent similar tests all did the same.

The compiled programs run considerably faster than their Basic equivalents, and of course the libraries allow you to include all the special features of the Arnold's firmware such as EVERY and AFTER and all the juicy sound and graphics effects without any effort whatsoever.

It is very difficult to find fault with the compiler at all, funnily enough. The only annoying thing I found was that the screen is very difficult to read in 80 column mode, but this is a fault of the colour monitor rather than the C compiler. Considering that the whole things costs under £40, and includes as much as as any professional C programmer would expect, it has to be one of the bargains of the year.

It is unlikely that the huge popularity of the C programming language will die away in the near furture, and whether you want to learn to program in C or whether you are already an experienced C programmer who wants to work on an Amstrad, you would be well advised to buy this product before they run out of stock.



ACU

EXPANDABLE INTERFACE for the AMSTRAD CPC464/664

●DUAL RS232 - (For Modems, Printer, Touchpad)

2 Ports - 25 Pin Socket withModem Handshake Signals
5 Pin Domino, uses BBC Serial Cable.
8 Bit Printer Port. **£59.00**

●FULL EXPANDABLE INTERFACE

Dual RS232, 8 Bit Printer Port, 8 Bit Parallel 1/0 User Port, Software on ROM, 2 x Sideways ROM Sockets.

£89.00

●CPM SOFTWARE

To enable file transfer from Apricot, IMB, Mainframe, Many other CPM Machines. Also enables use of Telecom Gold, Micronet and other information sytems.

●TIMDISC 5 1/4" 2nd DISCK DRIVE

Software Portability, can read and write S/S CPM Disks for IBM and Compatibles. (Please specify for 464 or 664).

£149.00

Also Available **3" Second Drive £99.00**

OVER 200 AMSTRAD CASSETTE TITLES OVER 90 NOW ON DISK ALL NOW IN STOCK

●CPM SOFTWARE

MACRO 80 - £225.00, MBASIC - £360.00, MBASIC COMPILIER -£399.00 inc. VAT.

●FULL BUSINESS SOFTWARE RANGE includes:

Quest ABC, Sales Invoicing, Stock Control, Purchase and Sales Ledger, Nominal Ledger £149.00. Available Separate Camsoft Payroll £39.00, Amsoft Office Productivity including Database £49.00, Word Processor from £19.95, Spreadsheet from £29.00.

Complete Range of Bourne Educational Software

●SIDEWAYS ROM

Arnor Maxam Assembler on ROM **£59.00**
Arnor Maxam ROM (Fits Timatic Interface) **£39.00**

MicroPro ROM Card
MicroPro Programmers Toolkit ROM
Prestel ROM (Fits Timatic Interface)

All the latest games as soon as released.
Speech Synthesizers - From £29.95

●TAPE TO DISC TRANSFERS ●

MODEMS, CPC 464, CPC 664, PRINTERS

Mail order welcome, P&P free of charge Please send SAE for full list to:

NEWGATE LANE
FAREHAM, HANTS PO14 1AN
Tel: FAREHAM (0329) 239953

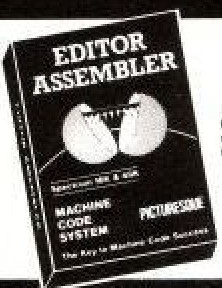
TIMATIC SYSTEMS LTD

DEALER ENQUIRIES WELCOME

NEWGATE MARKET
FAREHAM, HANTS PO14 1AN
Tel: FAREHAM (0329) 236727

"...a jewel of Spectrum programming..."

(Popular Computing Weekly)



£8.50 INCL. VAT & P&P.



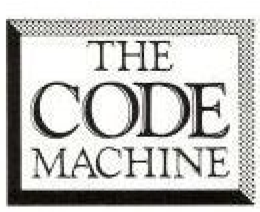
£7.50 INCL. VAT & P&P.

...now for AMSTRAD 464/664

* Assembler & Monitor in one package
* Many new features
* Fully relocatable
* Supplied on cassette — back up option to Disc
* Fully Disc compatible
* Plus much more

£19.95

PICTURESQUE



Fast Mail Order from: Send SAE for full details

PICTURESQUE (Dept **AM**), 6 Corkscrew Hill, West Wickham, Kent

---

UNLOCK YOUR AMSTRAD 464/664

AMSKEY

● Tape to tape backup utility (Must not be used to infringe copyright laws)

Multi colour display and so very user friendly.
Gives full header details and choice of saving speed.
Full on screen instructions and prompts.
FREE Peep a code program, for finding the hidden words in adventure games, etc.

Tape £6.99

AMSHELP

● Transfer tape software to disc

Better than most, AMSHELP will even transfer ASCII files. Also automatically adds a relocator for those programs that overwrite the disc memory area.
FREE Disc deprotector, list protected programs, etc.

Tape £6.99 Disc £10.99

AMSDISC1

● The most powerful Amstrad disc utility to date

Powerful CPM style utility with many features making easy work of disc file handling, including the unerasing of erased files. "No disc user should be without this utility" (Independent Amstrad review).
FREE Disc deprotector, list protected programs, etc.

Disc £12.99

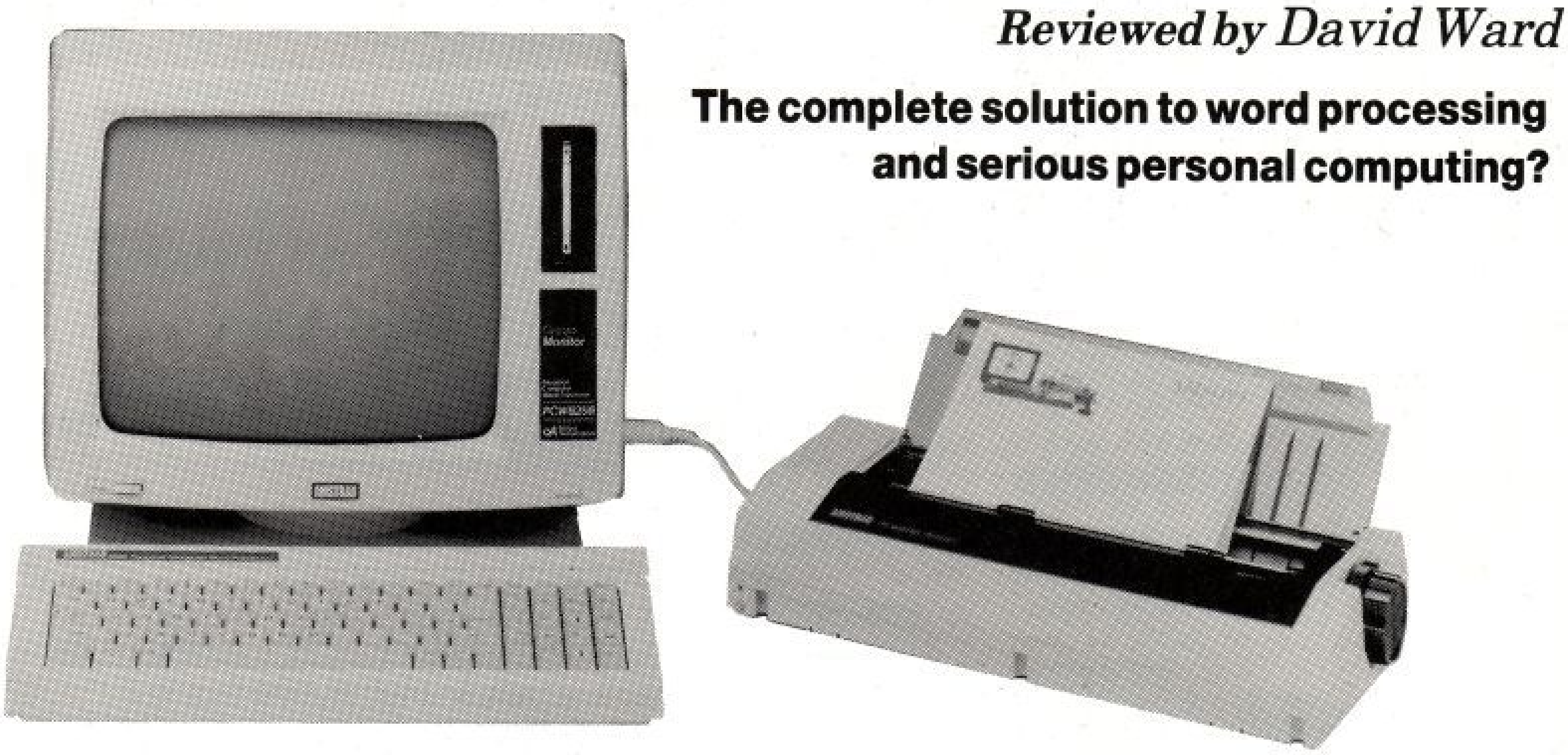
Prices include packing and postage
Overseas orders please add £1

INTERLOCK SERVICES LTD
37b New Cavendish Street
London W1M 8JR

AMSTRAD PCW8256

Reviewed by David Ward

The complete solution to word processing and serious personal computing?



Well, that's a bit of sweeping claim to make - even for Amstrad - but set against a price of £399, it would be hard to complain that Amstrad doesn't deliver. This brief overview of the product may seem a shade enthusiastic - but if you stroll down to your nearest Dixon's and see it for yourself, and don't agree, we'll be very surprised.

The PCW8256 will hereinafter also be named Joyce by ACU, the project code name borrowed from Alan Sugar's long serving personal secretary, Joyce Caley. It's a great deal more endearing than the 'PCW8256' mouthful, and there's even rumors that some of the overseas models may be bear the name on the badge in deference to the Great Lady.

Where to start?

This brief review is an introduction to a series on this machine, which we feel certain will fulfil every claim made by Amstrad for the revolutionising of attitudes towards electric typewriters. After all, for no extra, you can have Joyce on your lap. (The keyboard, at least!)

The Word processing Software by Locomotive is quite astounding on a product of this price. From a brief to produce something 'a bit better than an electronic telex', Locomotive have gone over the top and produced features that are not found on £4,000 dedicated WPs. In fact, there's even an £8,000 kit that must now look to its laurels when set alongside Joyce.

With Joyce, Amstrad has continued its remarkably rapid progress away from the superficial 'mug's eyeful' that started with the CPC464 and into the next phase where quality features as heavily as styling and perceived value. The project has teed up Amstrad for an onslaught on the very lucrative and slightly too complacent office equipment marketplace, which now has to come to terms with a product that has knocked the bottom out much of their business.

The Other 'Arf

But Joyce is not simply a brilliant WP, her alter ego is that of a fully functional CP/M Plus computer with that wonder that emerged just at the so-called 'passing' of the 8 bit age, the RAM disc.

Such is the cost of RAM that Amstrad have lobbed in 256K, of which 112K behaves as a disc - but much, much faster. Running applications such as SuperCalc2 from RAM disc on Joyce, is actually faster than running on a standard IBM PC. Calling functions such as the Help screen is instantaneous, whereas without RAM disc, the delay while the program calls up the overlay is a considerable bind.

The separation of parts of the program into overlays is a great help to program designers who can design programs to fit 'all sizes' of machine - but the compromise has always been the to-ing and fro-ing of the disc drive. It makes more sense to organise a machine with RAM disc than expect a publisher to customise his program to take advantage of the fact that your machine has extra memory organised as addressable program RAM.

The big screen (90 columns by 32 lines - 720x256 pixels) is a great help, and it's reasonably easily installed in most applications that I've tried. Most programs give you an installation option to tweak the screen parameters, although the basic screen addressing is set up by simply selecting either the VT52, or the Zenith/Heath 19/29/89 formats.

It's a very rare program that doesn't offer one or all of these as a standard terminal option.

It gets better

And if all that's not enough, the built-in (or should that be built-on?) printer thinks it's an Epson FX80 when it's under CP/M control, and is not dedicating itself to the WP function. It is important to note that LocoScript (evidence that all the good names for WP software have long since been copyrighted!) does not use CP/M, but flies the hardware directly, and in so doing achieves speed that is unthinkable to CP/M80. Features like multiple windowing, sideways scrolling, simultaneous print and edit all conspire to make the user imagine that they must be using a PC running Concurrent DOS with windows.

Printing

The printer has an automatic paper feed system to help align single sheets, and a tractor mechanism for continuous stationary is supplied as standard.

The printer provides Letter Quality operation at approximately 20 cps, or draft quality text at 90 cps (Elite pitch typestyle). Features such as pitch, italics, boldface, underline, super- and sub-script are provided by the built-in software. Play around and you may eventually be able to sample all 400 or so variations of typestyle available via BASIC.

Simple to use

Simply switch on and insert the disc, and you're away. With the 'user friendly' software of the PCW8256, word processing need be no more complicated than using an electric typewriter - although as you absorb more of the fundamentals and skills, then you can progress further to take advantage of some of the most powerful word processing software available anywhere. Features such as 'stenographer' shorthand text memories that recall whole paragraphs at a single keystroke, headers, footers, customised display, fully integrated control of printer functions such as super- and sub-scripts, boldface, italics etc., are easily available in plain language step-by-step menus.

The PCW8256 keyboard has 82 keys and is designed to work directly with the LocoScript software to help make the job easy. The 'pull down' menus of operations are called up using special function keys that avoid the need for learning a special series of complicated codes to perform such simple tasks as moving the cursor to the end of the line.

If your business involves standard letters and forms of contract, then you can recall a 'template' document and just change the names and customer specific details on anything from a simple quotation to a complete 100 page contract. LocoScript means that you only need change an item once for it be replaced every time it occurs in the entire document -and for the document to be automatically reformed for changing line lengths.

The word processing software allows for the creation of documents up to the maximum available disc capacity, and will permit simultaneous printing and editing. Features such as pagination, automatic paragraph alignment and re-alignment are provided, together with a powerful collection of editing features for cut/paste etc. The large area screen includes a series of pull-down menus accessed by simple function key selection controlling all main edit controls and text format commands.

Still more.....

As well as the LocoScript word processing software and the CP/M operating system, Amstrad are supplying Locomotive Software's Mallard BASIC -which although not as widely known as the ubiquitous MicroSoft BASIC, is regarded by the industry luminaries as being the best all round BASIC available, with many powerful features designed for functional BASIC programming. For example there's JETSAM: a scheme for index sequential random access filing. It all adds up to an interactive environment that obviates the relevance of far less widely understood programming languages such as COBOL and PASCAL.

A multi-function combined serial and parallel interface has already been designed with full supporting software for use with modems for electronic mail systems, serial printers etc. Those of you familiar with the problems of setting up serial interfaces will be delighted to learn that the set-up follows the same style of simple pull-down menus that characterise the word processor command sequences.

Amstrad appreciate that the PCW8256 is likely to find its way into many educational establishments, and so the leading eductaional training langauge is also supplied with the system in the shape of Digital Research's Dr LOGO and the GSX Graphics System Extension.

With its optional serial interface, the PCW8256 can become a versatile and very cost effective 'intelligent' terminal on mainframe computer systems either by direct connection or via a modem.

Yet to be seen by this reviewer is the 1Mbyte (720k formatted) second disc drive. Again using 3 inch discs, but double head, double track to match the capacity of big 3.5 inch and 5.25 inch systems. This should look after about a month's worth of letter data for an average secretary.

CP/M Applications software

Amsoft is supplying - under its own label - versions of the Big Three packages. Wordprocessing (supplied already!), Spreadsheet - SuperCalc2 from Sorcim, and the value for money ABC accounts suite in conjunction with Quest International.

A specific arrangement has been made with a leading software distributor - Tradesoft - to make other CP/M 80 programs available on Amstrad 3 inch discs through a newly formed specialist retail source established by Garwood (Wholesale) Ltd. - NewStar Software Ltd. who will be offering a mail order and support service. A copy of this catalogue is available on request from Garwood.

No gripes you can get it on 3 inch!

In view of the completely new window on CP/M provided by the 8256 and 6128, it seems that there are many unexplored facets to the supply of software - not the least of which is putting the screws on publishers who still insist on selling it for more than the cost of the hardware......

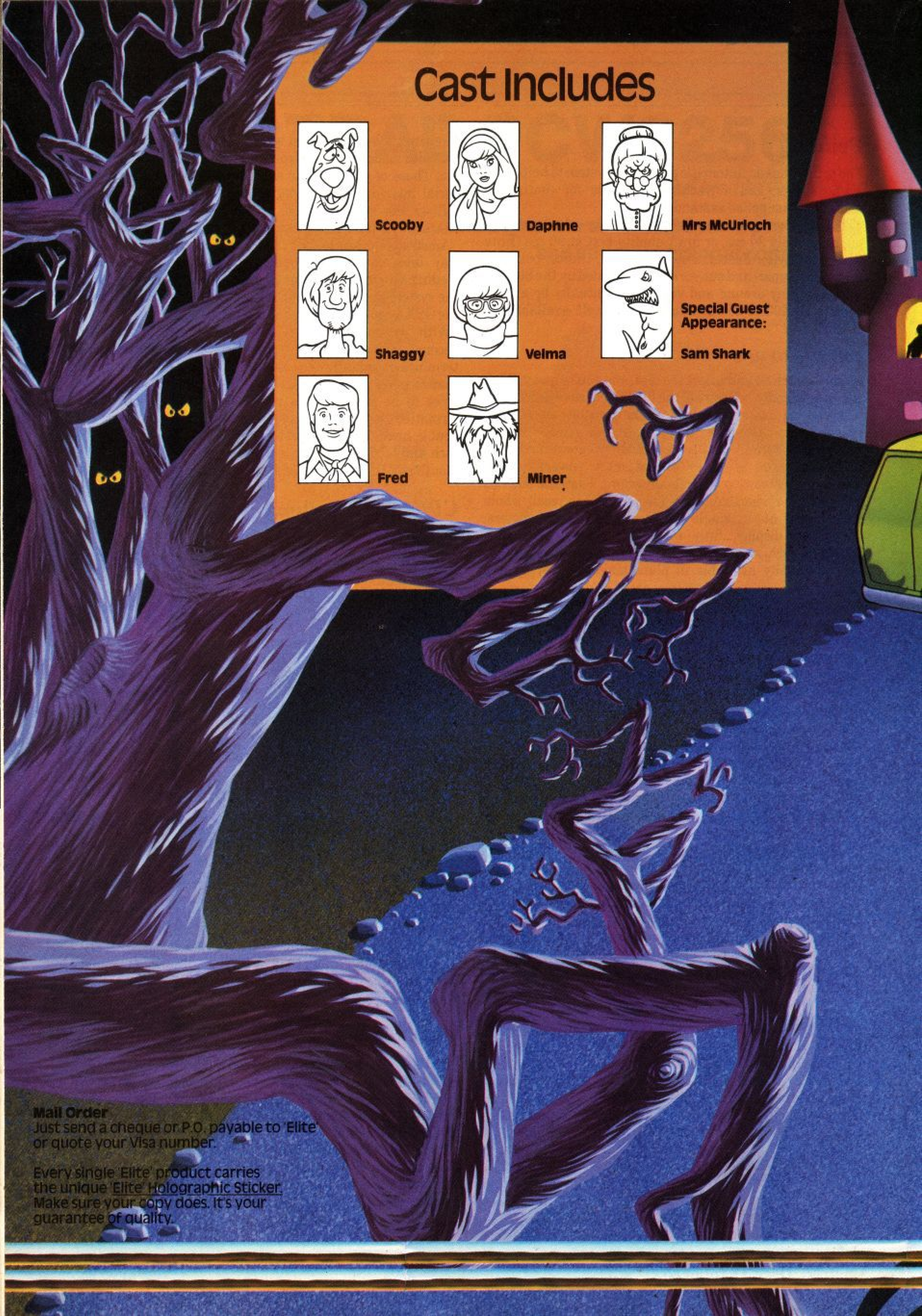
Outside Amsoft's Big Three, you'll find sophisticated modellers such as Software Technology's Cracker. Database managers such as Ashton Tate's Friday and dBaseII. Acclaimed typing tutors such as Caxton's Touch 'n Go -and the innovative (if pricey) Brainstorm from the same house. Watch these pages.

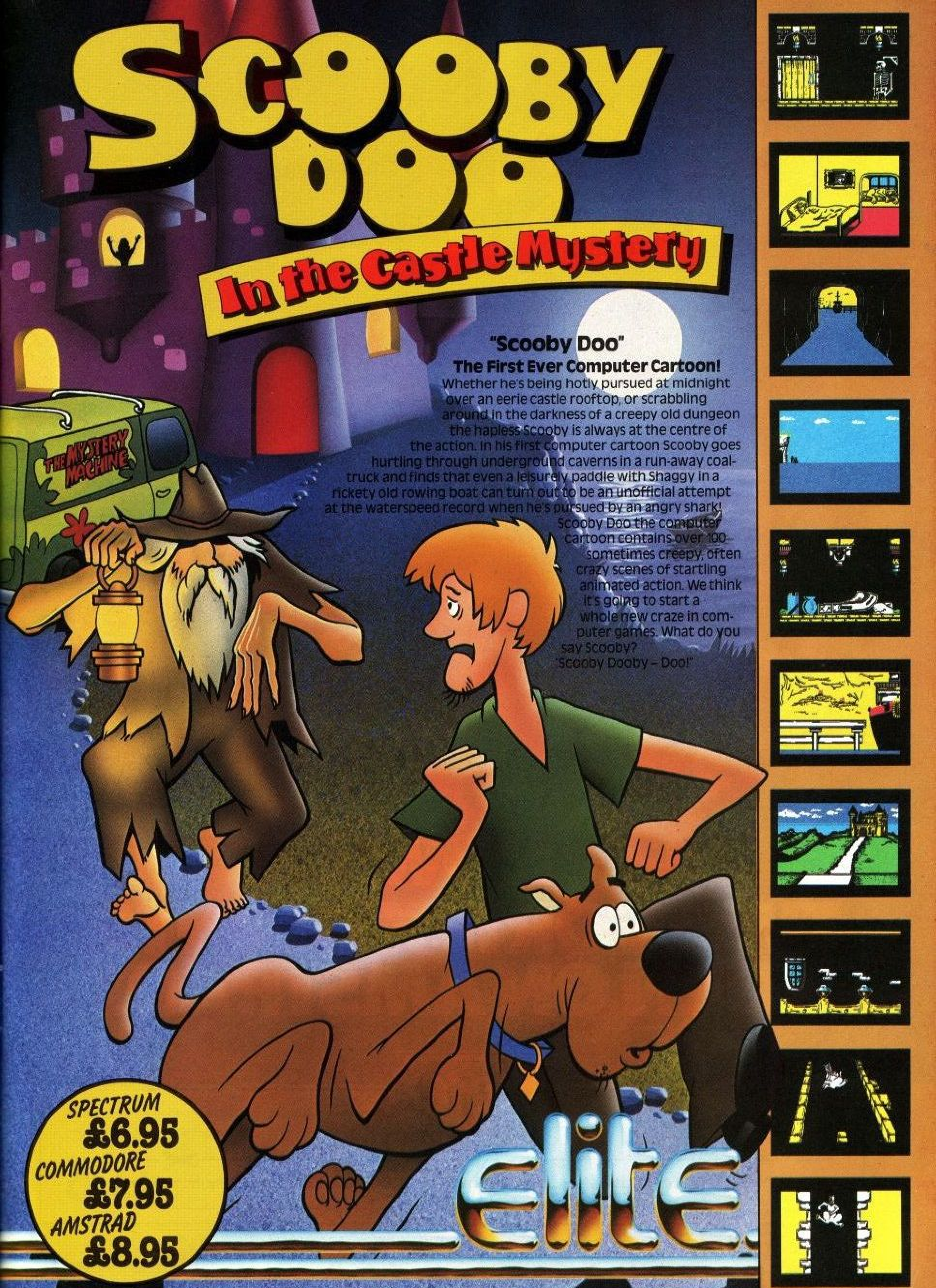
Conclusions

There's so much more to be said (and, don't worry, we'll be saying it) that ACU will be devoting a complete series to 'Living with Joyce'. There won't be too many available in the UK this year (mainly through Dixon's on the high street), so place your order now.

There's no doubt the machine will be the hottest seller in the market in 1986. Remember that Amstrad shares stand at around 82p at the time of the launch, check them out in 12 months time.

ACU


Cast Includes
Scooby
Daphne
Mrs McUrloch
Shaggy
Velma
Special Guest Appearance:
Sam Shark
Fred
Miner
Mail Order
Just send a cheque or P.O. payable to 'Elite' or quote your Visa number.
Every single 'Elite' product carries the unique 'Elite' Holographic Sticker. Make sure your copy does. It's your guarantee of quality.



SCOOBY DOO
In the Castle Mystery
"Scooby Doo"
The First Ever Computer Cartoon!
Whether he's being hotly pursued at midnight over an eerie castle rooftop, or scrabbling around in the darkness of a creepy old dungeon the hapless Scooby is always at the centre of the action. In his first computer cartoon Scooby goes hurtling through underground caverns in a run-away coal-truck and finds that even a leisurely paddle with Shaggy in a rickety old rowing boat can turn out to be an unofficial attempt at the waterspeed record when he's pursued by an angry shark!
Scooby Doo the computer cartoon contains over 100 sometimes creepy, often crazy scenes of startling animated action. We think it's going to start a whole new craze in computer games. What do you say Scooby?
"Scooby Dooby – Doo!"
THE MYSTERY MACHINE
SPECTRUM £6.95
COMMODORE £7.95
AMSTRAD £8.95
elite



NOW. TWO VORTEX GIANTS TURN ON AMSTRAD.

Vortex SOFTWARE

· PLEASE SEND ME ·

☐ T.L.L.	AMSTRAD CPC 464	£7.95
☐ ANDROID TWO	AMSTRAD CPC 464	£7.95
☐ ANDROID ONE	AMSTRAD CPC 464	£7.95
TOTAL VALUE		£

NAME ____________________ BLOCK LETTERS PLEASE

ADDRESS ____________________

ENCLOSE P/O CHEQUE PAYABLE TO VORTEX SOFTWARE (SALES) LTD.
SEND TO VORTEX SOFTWARE (SALES) LIMITED. VORTEX HOUSE,
24 KANSAS AVENUE, OFF SOUTH LANGWORTHY ROAD, SALFORD, M5 2GL.

SPECIAL INTRODUCTORY OFFER £29.99 INCLUSIVE

COMPLETE PRESTEL LINK FOR YOUR AMSTRAD

- **Complete package consists of Modem, Interface, Software and connection lead.**
- **Fully compatible with the CPC464, CPC664 and CPC6128.**
- **Supports all Prestel features and can also be used with BT GOLD.**
- **1200 Baud half duplex mode for fast data transfer.**
- **Interface can be used alone to drive printers and plotters.**
- **Use Prestel's free password for limited access to Prestel database. ID 4444444444. Password 4444.**
- **Exclusive offer to Amstrad user readers.**

APPROVED for use with telecommunication systems run by British Telecommunications in accordance with the conditions in the instructions for use.

B.T. Approval No. S/2644/3/E/022886.



THE MODEM

British designed Acoustic Modem, flexible coupling fits all standard and Herald telephones.

More reliable in operation than some direct connect Modems.

1200/75 baud operation allows access to PRESTEL, MICRONET, BT GOLD, etc.

1200 baud half duplex operation to swap programs and data over the telephone network with other users.

Supplied with connection details and user manual.

Modem signals are RS232 compatible, allowing use with other computers and terminals.

Earpiece allows call monitoring.

Battery power, and LED battery state monitor for trouble free portable operation.

Batteries (4* AA cells) give 40 hours of operation.

Full BT approval.

THE INTERFACE

Plugs into Disk Drive, through Bus Connector for Disk Drives and other peripherals.

Can be used to interface to other RS232 devices, such as Modems, Plotters and Printers.

Baud rates supported 75/1200, 1200/1200 and 300/300*.

INPUTS:– Data, one handshake – RS232 compatible.
OUTPUTS:– Data, one handshake – +5 volt positive going Works with all TTL level inputs and most RS232 devices.

All interface features are software addressable, uses 8281 USART.

Supplied with full RSX drivers, which may be used in your own programs.

Not directly compatible with Amstrad CPM.

Supplied with extensive documentation and circuit diagram.

*Cannot be used with Modem.

THE SOFTWARE

Full PRESTEL support, including up to 16 onscreen colours and dynamic frames.

Information is displayed in real time, allowing page exit as soon as header details have been seen.

Terminal Emulation Mode, allows the Amstrad computer to act as a glass Teletype.

Allows access to BT GOLD and similar services.

File transfer allows data transfer from user-to-user over the telephone network.

Interface Configure Mode allows changing of interface Baud rate and data format.

The software is supplied on cassette but is fully disk compatible.

RSX drivers for all features can be incorporated into other programs.

Supplied with extensive documentation.

ORDER FORM

Please send me ____ Amstrad Prestel Pack(s) at £29.99, which includes VAT and P&P.

Please allow 28 days for delivery.

I enclose my cheque for £________
made payable to Cirkit Holdings PLC.

Please debit my Access/Barclaycard (delete as necessary).

□□□□ □□□□ □□□□ □□□□

NAME ______________________

ADDRESS ______________________

____

____

POSTCODE ____________ DATE ____________

SIGNATURE ______________________

Cirkit

Cirkit Holdings PLC Park Lane BROXBOURNE Herts EN10 7NQ
Telephone (0992) 444111 Telex 22478

GALLUP SOFTWARE CHART

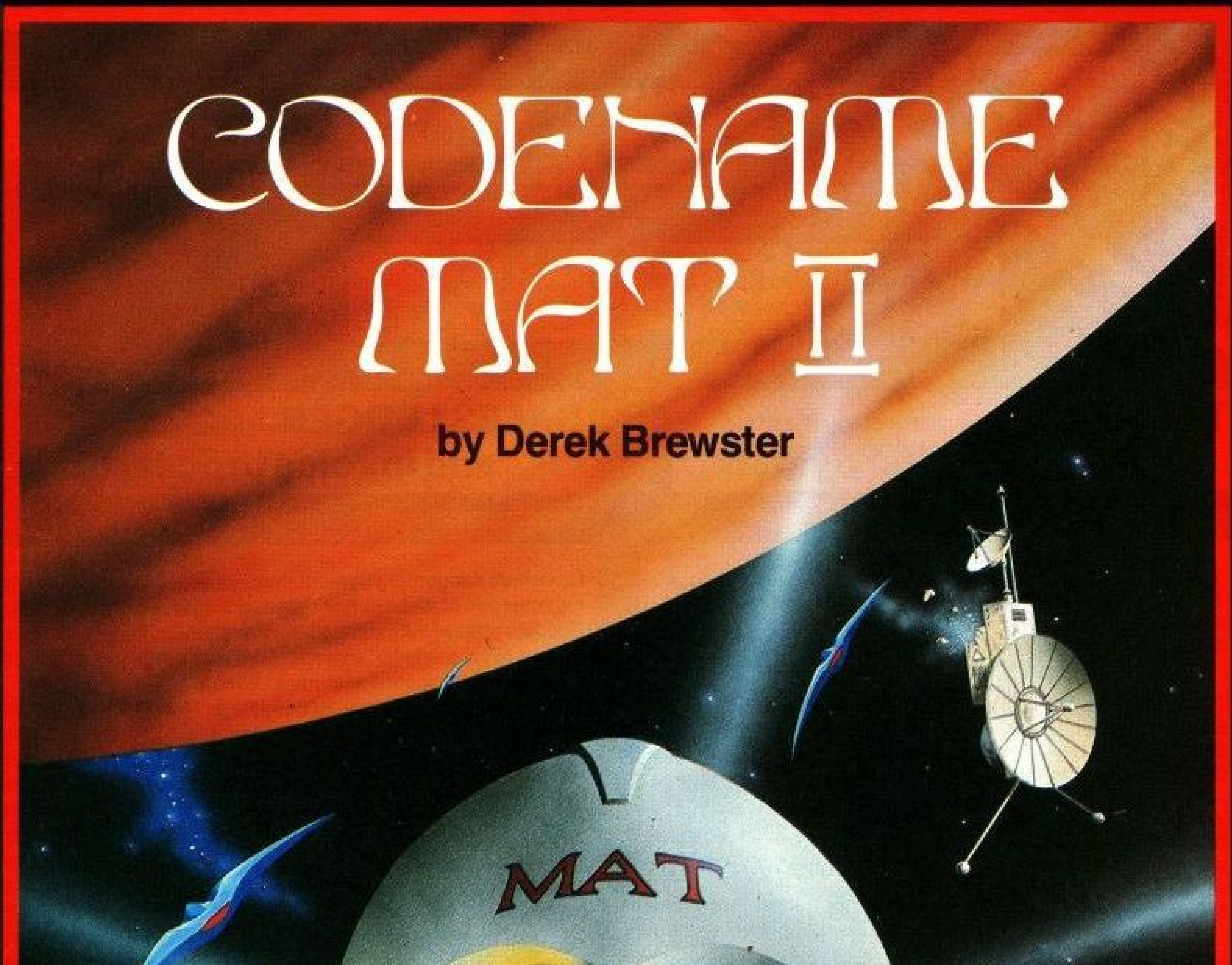


4 weeks up to 15/8/1985

	TITLE Publisher	Last Month			Months in chart	Market Strength
1	WAY OF THE EXPLODING FIST Melbourne House	-		664	NE	100
2	BEACH HEAD US Gold	7		D 664 A	2	45
3	ALIEN 8 Ultimate	2	▼	664	2	43
4	DUN DARACH Gargoyle Games	-			NE	42
5	FINDERS KEEPERS Master Tronic	-			NE	40
6	CHILLER Master Tronic	-			NE	38
7	KNIGHT LORE Ultimate	1	▼	664	3	36
8	GHOSTBUSTERS Activision	5	▼		4	35
9	DALEY THOMPSON'S DECATHLON Ocean	3			3	32
10	ROCKY HORROR SHOW CRL	14	▲		2	27
11	COMBAT LYNX Durrell	6	▼		4	26
12	3D STAR STRIKE Real Time	4	▼	664	3	24
13	RED MOON Level 9	-			NE	23
14	SHORT'S FUSE BT Firebird	-			NE	22
15	RED ARROWS Database	-			NE	17
16	BATTLE FOR MIDWAY PSS	-			NE	16
17	JET SET WILLY Software Projects	13	▼		4	15
18	NON TERRA QUEOUS Master Tronic	-			NE	15
19	MINDER DK' Tronics	11	▼	664	3	14
20	SORCERY Virgin	9	▼	664	3	13

D Available on Disc 664 CPC664/6128 Compatible A Available from Amsoft

DOMARK



GAME TYPE	: YOU'LL NEED A KEEN SENSE OF STRATEGY AND AN ACCURATE FIRE BUTTON FINGER
HOOKABILITY	: COMPULSIVE
LASTABILITY	: INFINITE
GRAPHICS	: COSMIC
RESPONSE	: LIGHTNING
COMPETITION	: HI-SCORE PRIZES

NOW ON : SPECTRUM 48K
AMSTRAD

AVAILABLE AT ALL GOOD SOFTWARE RETAILERS AT **£8.95**
OR SEND A CHEQUE/PO TO
DOMARK LTD, FREEPOST, LONDON SW20 8BR
OR ORDER BY CREDIT CARD ON 01-947 5624

DOMARK LTD., 204 WORPLE ROAD, LONDON SW20 8PN. TEL: 01-947 5624 TELEX: 894475 G

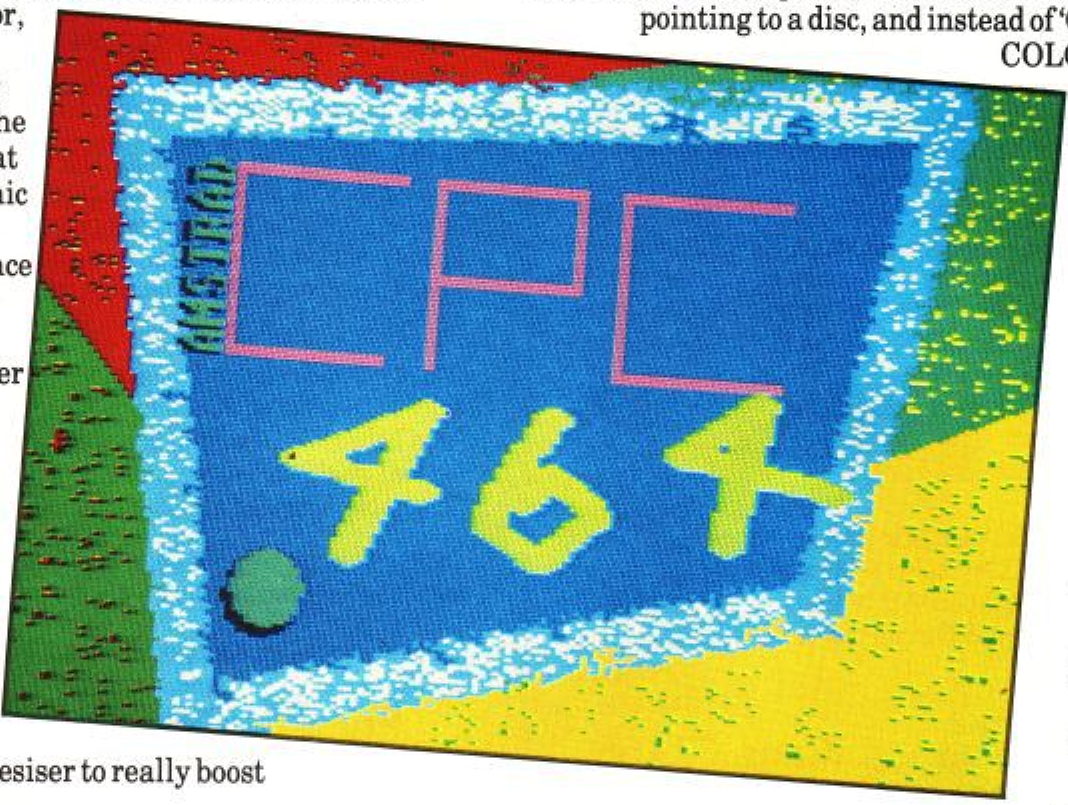
Light Writer

by Ben Lewis

A review of the dK'Tronics Light Pen

A light pen is a highly sensitive photo-electric device used as an adjunct to a cathode ray tube display unit. The operator can pass the pen over the surface of the cathode ray tube to detect images displayed on the screen. It achieves this by noting the position of the pen and comparing this with a predetermined set of coordinates contained within the governing software.

In plain English, a lightpen is a device, shaped very much like an ordinary pen, which, when placed up against your television, television monitor, or green screen, will send information to the computer telling it where the pen is. The practical upshot of this is that you effectively have electronic pen and paper. It works by calculating the time difference between when the screen is starting to be updated and when the electron scan (raster scan) reaches the pen and therefore requires the presence of light to work.



dK'Tronics claim that it is compatible with the '464, '664, DDI-1 and MP-1, although I imagine it is compatible with the MP-2 as well. You can also use it in conjunction with the dK'Tronics speech synthesiser to really boost the power of your machine.

The package you buy consists of the pen, an interface to connect the pen to the computer and a cassette with software to demonstrate its capabilities. There is also a 32-page manual. The pen plugs straight into the side of the interface using a 3.5 mm jack plug and can be removed when the computer is on or off. The interface, like that used for the dK'Tronics speech unit, is very neatly styled and roughly the same size, and looks quite at home protruding from the floppy disc port less precariously than the floppy disc interface itself. Unlike the speech unit, the lightpen can be used with the disc drive on all Amstrads since the current drawn from the computer by the unit is quite small. It therefore does not affect the performance of the computer. The software, which is recorded on both sides of a cassette using SPEED WRITE 0, consists of two unprotected programs (to allow the purchaser to copy the software to disc or to make a backup copy using SPEED WRITE 1). These are a graphics package, similar to SCREEN DESIGNER only in its use, and some software to allow the pictures created to be dumped from tape or disc to the AMSTRAD or an EPSON type printer.

The manual is well written, clear and concise, and should prove no hurdle for even the most recent newcomers to the world of home computing. It concentrates mainly on the graphics package, with about a page and a half near the end with instructions on how to use the pen in one's own software creations.

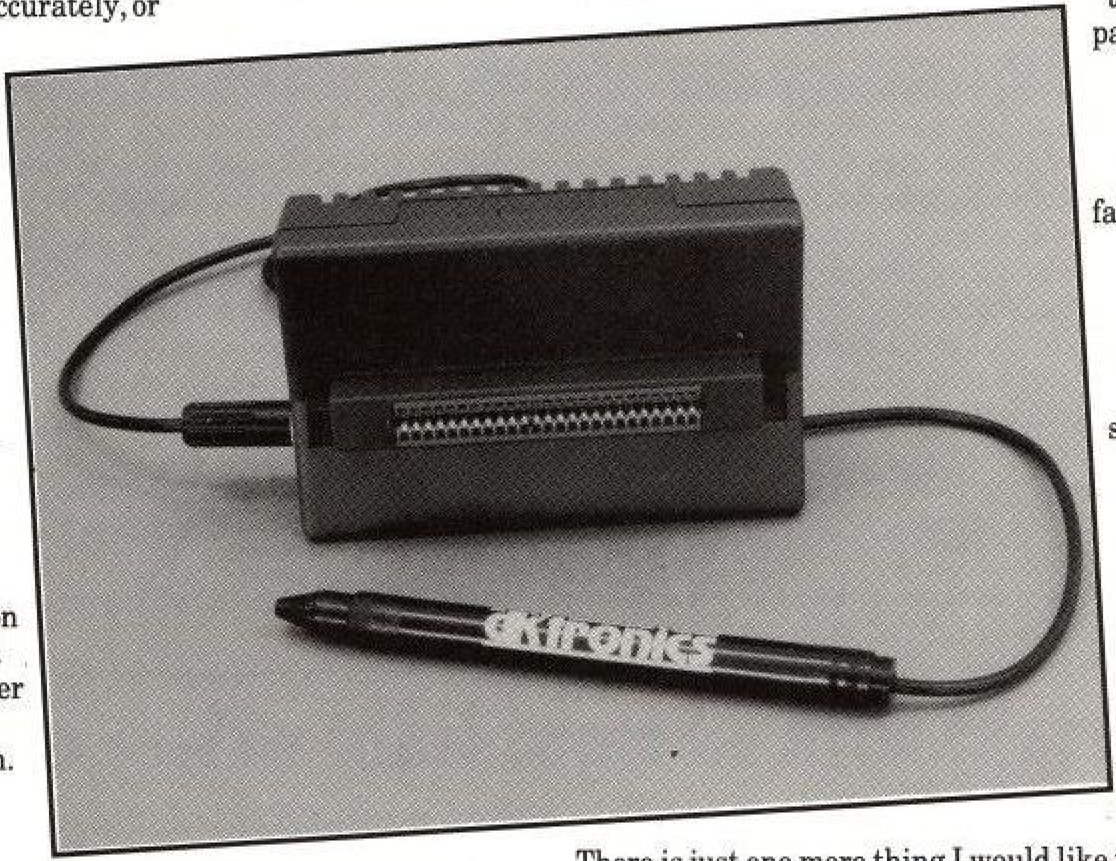
Since the manual suggests that the software should be loaded first, I proceeded in this way. The graphics package, taking about 4 minutes to load, is very well presented and easy to use. It makes use of 'ikons' in the menus, which are pictures in place of words representing the function to be performed. For example, instead of saying 'SAVE PICTURE TO DISC', there is a picture of the CTM 640 with an arrow pointing to a disc, and instead of 'CHANGE PEN COLOUR', there is a picture of an artist's palette. To select an item, you simply point the pen at the ikon, with the pen almost touching the screen, and press enter. The manual suggests that this is an ideal way to introduce even the youngest children to the world of computers. I am not too sure of this since quite a few keys on the keyboard are used throughout the package and this may confuse the child anyway.

It is a pity there is no push-to-make-switch on the pen since this would enable it to work totally independently of the keyboard. This, however, would put the price of the device up quite a bit since the circuit in the interface consists of only five resistors and a transistor. There are eight menus to access, which are nested to five levels, and quite a few sub-menus. Some of the ikons, such as palette, are repeated two or three times, in order to save you having to trundle all the way back to menu three or whatever to change the pen colour in the middle of a procedure.

The first thing to do, once the software is loaded, is to calibrate the pen. To do this you select the calibrate ikon (a cross with a circle around) and press enter. On entering the calibration mode, place the pen to the screen, and the cross should position itself under the point of the pen. If the cross is slightly or more offset, you use the cursor keys to adjust its position. This where I hit my first major snag. Not only did the cross move too quickly under the direction of the cursors to allow satisfactory adjustment, but it was jigging about so much, even when the pen was absolutely still, that calibration became impossible, if not a farce. The calibration of the pen is greatly altered by the brightness of the screen,

and so this has to be kept constant throughout use. Another annoying problem is that once the pen is calibrated, it must be used at the same angle against the screen (ideally perpendicular) otherwise slight discrepencies in accuracy will result.

After calibration, you enter a menu allowing you to draw, fill, change the pen colour, change the brush, or move onto more exotic features. In draw mode, you can either 'plot' single brush styles (like placing a blotch of paint on a wall) or it is possible to draw a continuous line between a 'blotch' and the present position of the pen. Once again, the cross was jigging about so much that it was impossible to draw continuous freehand accurately, or determine the exact termini of a line. dK'Tronics admit to this blemish, and provide an accurate means of positioning the cross using the cursor keys. This does perhaps defeat the purpose of using the pen. Fill, on the other hand, provides a quick and easy means of filling a portion of the screen in the present pen colour.



The other two ikons on this menu, palette and brush, allow you to alter the colour and style of the brush to paint with. You can choose from ten colours predetermined by the software and no more. There are five painting implements to use. They include four brushes of varying width and a spray can which was most impressive, since it did not require the meticulous accuracy needed for 'fine line' painting.

Now on to the more exotic elements of this package. The next menu allows you to create complex shapes quite painlessly using an effect called rubberbanding. If you imagine you have 20 drawing pins and a rubber band, then, by placing the pins on the screen and stretching the rubber band around them, you can create your own curve or complex shape. You then secure the end of the band with another pin and replace the whole structure with paint in the colour and brush style you choose. You may use this technique to create circles and boxes as well where the termini of the band correspond to the centre and radius of a circle, or the two opposing corners of a box. The positioning of the pins is accomodated by the light-pen or the cursor keys depending on how accurate a drawing you require.

The last three menus allow you to copy a section of the screen, place text, or activate a scratch pad. While copying a section of the screen, you can either reduce it in size by up to four times, or increase by the same scale. To do this, you place a set of brackets around the section to copy and another set around the area to copy to. This sounds fairly straightforward but clever dK'Tronics decided to swap around the colour of the brackets when reducing instead of enlarging ie. while enlarging you copy to blue brackets and when reducing you copy from blue brackets. Do not mix the two up or else you may lose your picture by copying a blank space. The manual claims that the best way to learn 'is by trial and error'. You may loose a few drawings on the way but it is better than wiping out a screen you may have spent hours designing.

Placing text is very easy. You just position a character square size cursor where you want the text to start, and then write horizontally or vertically in any colour.

One of the problems of using a light pen on a graphics package is that individual pixels cannot be plotted. dK'Tronics have found a way around this by creating what they call a scratch pad. This is similar to the enlarge feature on SCREEN DESIGNER, but far better. The user can copy a small section of the picture, from anywhere on the screen, onto a separate 'drawing pad' or scratch pad. This is then edited with ease, since one pixel is indicated by a character square on the pad and finally the pad can be copied back or not onto the picture.

There is just one more thing I would like to add concerning the draw mode. As I said earlier, the light-pen works only when it recieves light ie. you cannot draw white on black, since the poor computer doesn't know where the pen is. This is fine if you can live without drawing on black, but I found you couldn't draw on a colour such as green (even on full brightness). The only way to get around this discrepency is to draw on, say, bright yellow, and then fill the yellow area with green.

The other piece of software that comes on the cassette is a machine code routine. This allows you, via a BASIC program typed in from the manual, to dump a screen, designed by the graphics package, onto your Amstrad or Epson type printer (the BASIC program is different depending on which printer you have). The print-out is done at a reasonable speed considering that each pixel is converted into a shade of grey, depending on its colour. The manual also gives information on how to change the BASIC program to work on any other printer capable of graphics.

Most people, I would think, would buy a light-pen to use in their own programs. The manual provides two little, but complex, routines, one in BASIC and the other in machine code, to return the values of the x-coordinate and y-coordinate of the present position of the pen on the screen. The position returned is only accurate to 40 along and 25 down, which corresponds exactly with mode 1 character size, ie. it is possible to detect single characters in mode 0 or 1, but not in mode 2. Care must be taken though in remembering

that the values returned are on a scale 0-39 and 0-24 and are thus shifted one along and one up from the actual coordinate system used by the computer.

After playing around with this for a bit I discovered that the values returned are quite accurate, but only at one particular brightness (full brightness on my monitor). When I then turned the brightness down to the threshold level of the pen (the brightness at which the pen just begins to register its position), I discovered that the y value is altered by one or two and the x by up to four character squares. I must conclude that it is neccessary to have a calibration routine in any software to account for the varying brightness a user may wish to use.

As mentioned earlier, the pen will not operate on darker colours. I went about discovering exactly which colours will and will not work by trying to pick up the position of a bright white letter on a varying background. The following background colours would not register:- black, blue, red, magenta, bright red, purple, green, cyan, yellow, white, orange and pink. This accounts for almost half the colours. There is the general trend that colours containing a hint of red (eg. purple or orange) seem to get the worst results, and remember, this was all done at full brightness.

So, what can I conclude from all of this? Well, the pen generally behaved itself in the programs I wrote for it. It's good at picking up images displayed in a bright colour on the screen, and this was demonstrated by a reaction tester program also given in the manual, which incidently used a bright white background.

The graphics package that came with the pen is certainly the best I have used on the Amstrad, even if it is being used without the pen. This feeling is mainly attributed to the rubberbanding and scratch pad features which I enjoyed very much. Oh, there is one other thing about the graphics package. If you load it from tape but with the disc interface plugged in, it isn't possible to load and save pictures from and to disc despite the fact that the ikons to do this are clearly shown in the first menu. This, I would think, is due to the fact that the software recognises that a disc drive is attatched, but does not execute a |DISC command once it has been loaded from tape - clearly a fault of the program.

I can see that the main use of the lightpen would be in choosing items from a menu as opposed to using it as an actual electronic pen. It would have been nice to have been able to pick up most of the colours instead of about half, since this limits the capabilities of the computer instead of enhancing them. Another change I would have liked is to have had the return of the x- and y-coordinates via an RSX, which could be loaded from tape or even better, be held in a sideways ROM in the interface.

Of the three major ways of controlling a cursor without the use of a keyboard (lightpen, mouse and electronic pad), the lightpen is certainly the least accurate. It is also the cheapest by a long way, although I think £34.95 for the dK'Tronics pen is a little steep, despite the fact that you get an excellent piece of software with it. If I had to make a choice between the dK'Tronics Speech Synth and the lightpen, I think I would plump for the Speech Synth since it does add an extra dimension to the computer, and not just enhance existing ones. But if you are looking for a bit of extra fun on your Amstrad, the pen is worth getting. ACU

Write right with a bright light write, all right!

If you've read our review of the DK 'Tronics light pen, you'll be dying to get one. Then die no further, here is your chance to win one of 24 light pens that DK 'Tronics are giving away.

It's dead simple, all you have to do is start at point A and work out the shortest route to point B, on the map, by adding up the numbers given on each line. The smallest total gives you the shortest distance. Colour in the map on the entry form and write the total in the box provided.

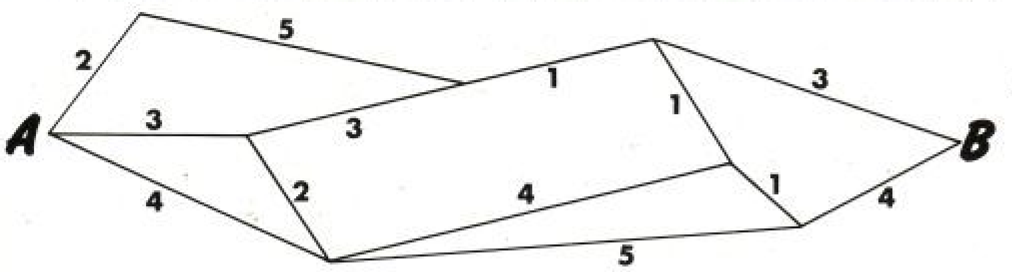
Rules

1.The winners will be the first twenty four correct entries drawn on October 31st 1985.

2.There is no limit to the number of entries any individual can make, all entries, however, must be on an official entry form.

3. No correspondence can be entered into regarding the competition. Entries cannot be returned.

4. The judge's decision is final. No employees of Amstrad, Amsoft, or Amstrad User, nor their relatives may enter.



Answer [ ]

Name..

Address..

....

.......................post code..................

Entries should be sent to:

Light Pen Competition
Amstrad Computer User
169 Kings Road
Brentwood
Essex
CM14 4EF



The INDEPENDENT monthly from Future Publishing
No. 1 OCTOBER 1985 £1
AMSTRAD
ACTION
POWER-PACKED REVIEWS FOR CPC 464/664 OWNERS
OVER 100 GAMES REVIEWED!
BUSINESS PROGS
we name our top 10.
Britain's incredible new Amstrad mag. At a newsagent near you. On September 12th.
playing tips competitions adventuring

CPC6128

Andrew Clarke reviews the third Amstrad Computer

Just when the last of the major Z80-based CP/M + machines have been withdrawn, Amstrad is releasing the CPC 6128, a Z80-based machine with CP/M+. This has caused puzzlement within the microcomputer industry. Either AMSTRAD is wrong, they say, or everybody else is wrong. My own feeling is that everybody else is wrong. CP/M+ is probably the best microcomputer operating system available, and the Z80 works just as well as it ever did. What Amstrad have done is to release the first affordable CP/M+ machine. The CPC 6128 costs less than Digital Research's original asking price for the license fee for CP/M+ alone. Amstrad throw in all the hardware, and some more software for free. Forget innovative hardware, just the price is revolutionary.

Fashions change very fast in the microcomputer industry. The business market is currently dominated by hardware based on the IBM-PC design. The hardware is bus-based and therefore expensive to produce, and compatibility with the original IBM design requires the use of rather old support chips, and quite a lot of them. Everybody used to assume that the home computer market would follow in the wake of the business market, with machines copying IBM's design with cost-saving ULAs and PALs in place of the extravagant chippery of the original. If Amstrad's new offering is a sign of the times, then this idea is wrong. We may, in fact, be seeing eight-bit home computers continue to develop alongside 16-bit offerings for a long time to come.

Although the Z80 pre-dates the IBM-PC's 8088, the efficiency of Z80 computers is generally recognized. They suffer, however, in their inability to directly address more than 64K of memory (the rest being accessed by tricking the innocent chip bank-switching or memory-mapping.) It is also difficult to design a compiler (for Pascal or C, for example) that will produce efficient code for a Z80 machine. Nonetheless, there is not a great performance gap between the Z80 micros and the current 8088-based designs.



Good Heritage

When Bill Poel of Amstrad originally contacted me about the 464 (Arnold) before its launch, he seemed slightly grieved about my hilarity; Uncle Clive Sinclair had just announced the QL, a micro of advanced design and ambitious specification. Arnold could not, in all charity, be called a contemporary design. Bill didn't tell me about Arnold's price until I had made a fool of myself by saying that Amstrad must have slid gently out to lunch. When I got one to use, I was impressed. After I had got over the simple pleasures of Harrier Attack and Electro Freddy, I plugged in the add-on disc drive and began to use it as a CP/M machine. One just had to close one's eyes occasionally and think about the price. I knew all the tricks of using a one-drive CP/M machine from my beloved old machine 'Big Think' (built in the dark days of 1979, the only micro suffering from woodworm) Arnold was usable. Good grief, it would run a spreadsheet Wordstar MBasic. It was, of course limited by its small available memory (TPA) and its rather wretched disc capacity, as well as the slowness of the console (screen update), but it worked adequately, reliably and was cheap. The 664, which succeeded the original Arnold, was a welcome arrival but merely reflected the fact that disc drives had approached the cost of cassette drives. Having the built-in disc drive certainly made the kit more compact.

The effect of the 464 and 664 on the CP/M marketplace has been curious. Old-fashioned CP/M 2 is now a best-selling operating system once more, a year or so after it ceased to be maintained by its producer, Digital Research. The tide of IBM-PC madness had swept away CP/M as a commercial alternative to PCDOS and it was entirely by chance and Amstrad's imaginative decision that trusty old CP/M 2 then eclipsed MSX as a home computer operating system. Arnold has enabled a whole new population of computer users to obtain the benefits of CP/M.

CP/M Opens the Door

The fact that Arnold runs CP/M gives access to a huge number of programs, compilers, and utilities. It is a matter of trial and error to see what will run on Arnold. As a games machine it is ideal, as it has a bit-mapped screen that enables the games programmer to manipulate the graphics display easily and quickly. It has an excellent Basic too. CP/M was clearly an afterthought. Although a CP/M system will run perfectly well in as little as 16K, most commercially available programs require 48K or more. Because of the AMSDOS and bit-mapped screen RAM, Arnold could offer only 38K. The drive capacity is severely limited too. The big CP/M programs use overlays and data files, all of which are usually required to be on the same drive as the program itself. Any drive capacity less than 240K will give problems to the larger commercial programs. Another problem that becomes noticeable to someone used to other CP/M machines is the slow screen update. When evaluating the real performance of any microcomputer, the screen update speed is of great importance. If the kit is reliable, the disc access speed is good, and the screen update is fast, then other imperfections are more easily forgiven. It must be remembered that the CPC6128 is more than just a CP/M+ engine; it leads a schizophrenic existence, sharing its time with Amsdos. Here other constraints become more important. The ability to use colour and different modes without using bags of RAM means that the character set needs to be packed into memory so that 20, 40 and 80 column modes can be accomodated by clever software. The unpacking process is slower than a straight copy from the character set, a small price to pay for the flexibility of Amsdos.

One's first impression of the new CPC 6128 is that it is much better designed than Arnold. It is slimmer, shorter, and prettier. The addition of rubber feet means that a disc can be inserted without the very light unit skating across the table. I think that the keyboard has a rather better feel to it as the keys give a perceptible click when pressed; however, the 'feel' is not to everyone's taste. The vivid bright green, red and blue keys have also been toned down in favour of a more restful grey. The actual keyboard design is one of the best I have ever seen, and conforms reasonably with international standards. The screen casing is very little changed from Arnold, and, internally, has the addition only of a power supply for the disc drive. Essentially, the machine itself is a much tidied version of Arnold with 128K of bank-switched memory. Running the machine is similar to running Arnold and it seems to be upward compatible with the older machine. All my software for Arnold runs on the CPC 6128.

It Plays Games Too

When used for playing games, the CPC 6128 can do everything that you have seen on a 464; although, as with the 664, software houses who have broken the rules may have problems getting their software to run. On the whole the 6128 is more compatible with a 664 than a 664 is with a 464, someone will prove me wrong, but it is fairly safe to assume that a program which works on both the 464 and the 664 will also work on the 6128. When playing games it is just like Arnold except that games are loaded off the disc. The extra memory makes no difference, and will only show itself when games writers use it. Games programmers have only just started to explore the advantages of disc. Sorcery + is the first game to take full advantage of this extra asset, perhaps we will see a Sorcery ++ which also uses the extra RAM. When games writers start using the disc, the effects will be far-reaching. (anyone who has used Microsoft's Flight Simulator, or the Original Adventure will know what I mean). I fear that I am rather spoiled as far as games go as I have an Atari and Coleco games computer. Nevertheless, the few games that I tried on the CPC 6128 were excellent, and children tended to play with the CPC 6128 just as much as the games computers. With the ability to load games off disc, and the quality of the monitor, the CPC 6128 seemed much slicker than the Sinclair micro. When one reckons in the value of the monitor and the disc drive and appreciates having a real keyboard, then the CPC 6128 is better value than any of the other offerings. The quality of the CPC 6128 as a games machine ultimately depends on the quality of the games that Amsoft and others release. With Ultimate and the like already writing stunning games which will run on the 6128, its game playing future seems assured. There are many games that run under CP/M. Adventure is compulsory, and both "Dungeons and Dragons" and "Cranston Manor" are available. None offer graphics or sound, but then the human mind can fill in better graphics than any computer.

The Best Basic Ever

The operating software on the Amstrad machines is Basic. There is nothing wrong with Basic. I must admit that, as a professional programmer, I never use it, but it is a respectable and useful language. Locomotive Basic is, I believe, the best Basic ever written. It really is fast enough to write games in, and the astonishing extra features, such as text windows, and simultaneous processes, are unparalleled. To maintain compatibility the extra memory is managed via an 'add-on' module called the Bank Manager. This may actually be rather fortunate as the only other Basic I know that tried to make full use of 128K of memory (Epson MultiFont Basic) ended up disastrously slow. My only complaint about the resident Basic is that its integration with CP/M is only at the level of AMSDOS file compatibility.

The Bank Manager program allows Basic programmers to make use of the extra 64K RAM. When the software was being developed, commands such as BANKDEPOSIT and BANKWITHDRAWAL were used instead of BANKWRITE and BANKREAD, this, however, did not fit in with the sombre nature of a business computer and so the idea was liquidated.

Despite the unexciting names the RSXes provided by the Bank Manager are jolly good. The RSX |SCREENSWAP moves a full 16K screen image from one bank to another. The 64K available is divided up into four blocks, any one of the images can be swapped with or copied to another block. This gives added scope for animation and is probably the most useful feature for anyone writing games in Basic.

The second facet of the Bank Manager is the ability to use it to simulate a RAM disc. Since RAM is very much faster than a real disc it is ideal for sorting and searching data. There are four commands : BANKOPEN, BANKWRITE, BANKREAD and BANKFIND.

BANKOPEN; n divides the whole of the 64K up into sections (records) each one n characters long. The BANKREAD and BANKWRITE commands can then be used to examine and update this information, BANKFIND can be used to search for a string within the extra RAM. These commands are ideal for writing a simple database program.

RAM to Manoeuvre

Far more CP/M software runs on the CPC 6128 than on Arnold. The increase in the size of available memory has been a profound advantage. You can now run Multiplan and other spreadsheets: Wordstar now runs well. The CPC 6128 specification is good enough to run most CP/M software. The limiting factor is now the drive capacity which has not been improved in the new machine. The CPC 6128 was, obviously, designed to read discs in Arnold's format. One could squeeze up to 200K from the drives by sacrificing this compatibility, but this is still not quite enough. Adding a second drive solves part of the problem but, by itself, is not quite enough. My suggestion would be to have a 256K 'Ram disc' instead as a plug-in addition. This would be comparable in cost to a second drive but much smaller and faster. A 'Ram-disc' is actually extra memory masquerading to the computer as a disc drive. It holds your programs and requires to be filled only when you switch on the computer. With that extra capacity, virtually all CP/M software would run, and run very fast. The cassette tape is no longer built-in to the machine. The only time that a cassette tape would be required is to load new games off cassette and put them on disc under AMSDOS, or possibly to send data or text through the post. To do this, one has to use an external cassette. The FD1 disc drive is simply plugged into the back to provide a second disc drive. Surprisingly, this second drive appears to be permanently selected unless the built-in drive is actually being read. Since the drive is only selected and not actually running there is no undue wear on the system.

As before, there are facilities for connecting a joystick and a stereo amplifier. I tested the monochrome machine in order to use it with CP/M (although of course you can run CP/M on a colour system), the colour version would have been better for games. Fortunately, one can use the MP2 modulator and a TV set to provide colour output. It would have been a good idea to have had composite video output in order to take advantage of the much better quality of televisions that accept monitor input. As before, there is no serial port, though an accessory serial port has been announced.

CP/M+ uses a real-time clock. With this, you can record when you created a file, last used a file, or updated it. This has provided some difficulties for the CPC 6128 as the 'system tick' is none too accurate. In all honesty, this should not cause much worry. If you use date-stamping at all, and it is only optional, it is rare that you will need the sort of accuracy that the CPC 6128 finds problematical. As the time needs to be keyed-in every time the machine is switched-on anyway, the inaccuracy will never show itself.

Lethargic Logo

The computer language Logo is provided with the CPC 6128. This is a new version, vastly better than the poor shrivelled specimen provided on Arnold but used by virtually no one. This version of Logo is intended to be used in the same way as Basic under AMSDOS. It provides access to both sound, joystick and graphics. Unfortunately, it runs the graphics so slowly as to be virtually useless for writing games. This version of Logo (DR Logo) was developed by Gary Kildall, who wrote CP/M, as a language to replace Basic as the primary microcomputer language. It is an excellent implementation and the CPC 6128 provides one of the best ways to get a LOGO computer. It is sad that the implementation for the CPC 6128 has resulted in such slow graphics. When DR installed the full version of this Logo on the IBM Personal Computer they had to re-write it to overcome the speed problems. Logo requires some work to learn but is rewarding to use and excellent as a teaching aid. It is sad that there is no easy way a robot, turtle or plotter can be interfaced with the LOGO, as this would make it much more interesting to use. It was disappointing to see that the manual used so few Logo examples and omitted them entirely from the tutorial section of the manual. The section on Logo in the manual is insufficient to get you started. Logo deserves better than this, and I hope that AMSOFT make amends by publishing a book on using Logo with the CPC 6128.

GSX is provided on the machine. GSX is a piece of graphics software that is supposed to do for graphics what CP/M did for mass storage. It essentially converts graphics commands for a hypothetical standard graphics device into real graphics operations on a real device, be it a plotter, screen, or

printer. Unfortunately, there is little software around that makes use of GSX. GSX is designed to provide a micro with the GSX standard graphical interface. DR Graph uses GSX and is a very good business graphics program. Unfortunately, it requires a greater disc capacity to run and is overpriced. Digital Research have a new version of GSX called GEM but it does not run on 8-bit machines. The whole point of GSX is to use programs that interface into GSX. It is scarcely worth using it for its own sake. As there are so few programs using GSX, it all seems rather pointless, particularly as Digital Research are unlikely to release application programs to run under it.

Interior Design

When one takes a screwdriver to the machine one is struck by its simplicity. A couple of ULAs, a ROM, two banks of 64K ram chips, a Z80, an 8255 PIO, the sound chip,the floppy disc controller and the CRT controller. There is no CTC (timer chip), DMA controller or SIO. There is a joystick port, a monitor socket, stereo output socket, tape socket, parallel printer port, disc drive socket and a general expansion socket. It is not cramped inside the box; in fact there is some space between the Circuit board and the disc drive which could be used for expansion. The whole hardware design represents a compromise between cost and functionality. One could bleat for extra facilities but one would moan about their cost. When you look at the 6128 you are seeing a good attempt at the 'People's Computer', workmanlike but hardly luxurious.

On Your Marks...

It is rather unkind to compare performance of different computers of wildly different price, unless one bears the price in mind. With this in mind, though, here are some comparative timings. As time ran out for this review, I was not nearly as thorough as I would like to have been so I addressed myself to the two major areas of performance, screen and disc. Calculation and such is more a function of the CPU clock and so I did not run a test on this. There is no particular significance in the machines chosen; they just happened to be around when I ran the tests:-

1. Draw a circle.

This is an interesting little program that really tests the speed of the graphics under LOGO and the quality of the installation work on the DR Logo.

The routine was :- repeat 360 [fd 1 rt 1]

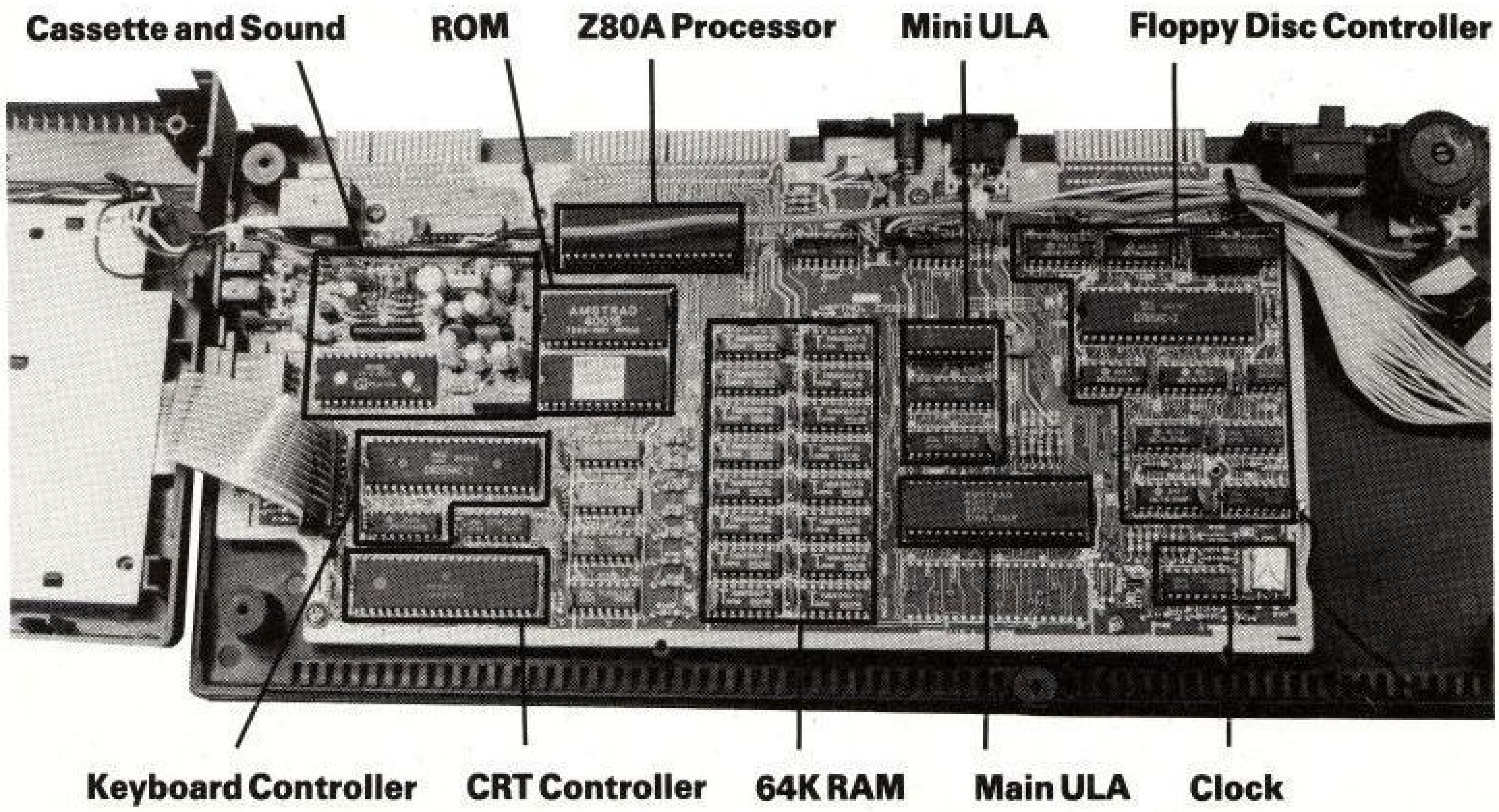
Timings were startling

SPERRY PC (DR LOGO- 16 bit version).. 23 secs
CPC 6128 (DR LOGO- CP/M+ version).. 1 min 43 secs
ARNOLD 464 (DR LOGO- small version).. 3 min 40 secs

Arnold took ten times as long to draw the circle as the IBM-lookalike. Even the full DR LOGO, which gets its cosines from a look up table, took nearly four times as long. Allowing for the difference in CPU clock speeds, one would expect the 6128 to be about half the speed. DR Logo does not seem to be a medium for games-writing due to the slow graphics, one wonders how useful the language would be in exciting and interesting youngsters.

2. Displaying a long file.

This test gives a rough-and-ready measure of the speed of the console (the rate at which characters are drawn on the screen). This is an important factor when using word processors or spreadsheets where the screen is continually being updated. Windows, pop-up menus and the like are ridiculous if the console I/O is slow. Here again, the 6128 does poorly when compared with other CP/M machines. Again you have to remember that these other computers do not offer Amsdos and are many times more expensive. The file chosen was the source to UKM7, a public-domain program. Disc activity accounted for around 10 to 15 secs of the time.



Epson QX10 (CP/M+)	2 min 0 secs
CPC 6128	5 min 43 secs
SPERRY PC (Concurrent CP/M 4.1)	3 min 30 secs

Now it is no use saying that it is unfair to compare with monochrome computers because the PC was running in graphics mode in full colour. I've seen ARNOLD software that writes direct to the screen running as fast as the QX10.

3. Disc Activity

This test just exercises the disc with very little overhead and is easy to do. Create a file called SELF.SUB with the two lines

;*
SUBMIT SELF
now type
SUBMIT SELF
and the disc will churn away for ever, or until you type 'control C' or until you pull the plug out. Ten iterations gave the following timings-

Epson QX10 (CP/M+)	41 secs
CPC 6128	44 secs

This shows that very little performance is lost from the other disc-based CP/M+ systems by using the cheaper 3 inch drives.

In general use, the 6128 fares reasonably, but I gained the impression that there was not a great speed improvement in CP/M+ over CP/M 2.2 (which is also provided). Generally one expects a twofold improvement, depending on the activity, but I was puzzled by not seeing this with the 6128. There was not time to detail trials with real applications to explore this further for this review.

If I were asked what I would have liked to have on the machine, that was not provided, I would firstly ask for the serial port. Second on my wish list is the rewriting of the screen drivers to obtain a greater performance. Thirdly, the floppy-disc interface should be modified to allow more than two drives to be connected and to prevent the continuous selection of drive B. As far as future enhancement modules go, I would like a Ram disc of around 256K, providing me with rapid mass-storage that would obviate the need for the second disc drive and allow me to run such nice overlay-based programs as DR Graph, DBASEII, Sensible Solution, and the like. Naturally, as I do a great deal of programming, I would like to connect a hard disc too, but I would be surprised if this were a common requirement.

Documentation

The user instruction manual for the CPC 6128 is a weighty tome, at first it may look a bit daunting. This manual, however, is the result of lessons learned from the 464 and 664 manuals. One of the reasons that it took time for other publishers to bring out books on the 464 is that the standard of Amsoft's own documentation scared authors off. Raw beginners will appreciate the foundation courses which serve as an introduction to programming. In many respects the 6128 manual is the same as the 664 manual, a short chapter describes the use of Bank Manager and the new utilities on the CP/M+ disc. The most important of these is DISCKIT, this covers all the general disc copying and formatting functions which previously needed several programs and takes advantage of the larger TPA to speed up disc backups. The manual takes the user through all the prompts with suitably large warnings for anything which could result in the loss of data.

Both CP/M+ and CP/M 2.2 are included with the 6128 and both are well documented. Although the sheer size of the manual makes it quite hard to find anything quickly, the index is quite comprehensive and the spiral binding allows the book to fold flat. Since many first-time users learn programming from typing in magazine listings, the manual has several programs from 'Amstrad User' listed in the back. The firmware guide which has been much praised by software houses and computer buffs has been upgraded to cover both the 664 and 6128 and should be available soon.

Conclusion

In conclusion, I would heartily recommend the CPC 6128. In fact, I think that it will be a very successful computer. It has nothing innovative about it but its small size, the efficiency of the board design and, more importantly, its extraordinarily low price. It appears backward-looking in its design when compared with the new Apple, Atari and Commodore machines but it is cheap, reliable and has plenty of software of all types to run on it. It compares with machines costing over four times as much and must represent the best value for money ever seen in microcomputers. No computer is perfect, and the CPC 6128 has problem areas, but they do not spoil the computer and are remediable. As for me, I am happily dusting out all the old favorite 8-bit CP/M software that I had put away, thinking that 8-bit CP/M was dead, and using it once again. There is lots of mileage in the old operating system yet.

The Plusses of CP/M+

If you are already familiar with CP/M 2.2 you will find that CP/M+ offers:

☆ Much faster performance of such programs as ledgers, databases, payroll systems and management tools, due to increased disk performance.

☆ The CP/M interface need never be seen. The 'Autostart' system means that the program, or batches of programs, can be started and run merely by switching on and putting in the disk. The new SUBMIT, GET and PUT utilities present remarkable possibilities for 'turnkey' systems. Even the CCP itself can be easily rewritten for custom applications The user can run graphical programs that use the industry-standard GSX interface. (GSX does for graphics what CP/M does for discs)

☆ There is no need to do the mysterious 'SYSGEN' operation on new disks.

☆ The user now knows precisely when a file was created, updated or accessed. (files are 'date-stamped').

☆ Files are far easier to find (all drives can be searched in one
DIR command)

☆ There is built-in password protection of files. This feature, along with the datestamping, provides more security in an office environment.

☆ The infuriating 'BDOS errors' are now much rarer,

Thinking Software?
. . . think Tasman

TASPRINT 464 The Style Writer

A must for dot-matrix printer owners! Print your program output and listings in a choice of five impressive print styles. TASPRINT 464 utilises the graphics capabilities of dot-matrix printers to form, with a double pass of the printhead, output in a range of five fonts varying from the futuristic DATA-RUN to the hand-writing style of PALACE SCRIPT. TASPRINT 464 drives the dot-matrix printers listed below and can be used to print AMSWORD/TASWORD 464 text files. TASPRINT 464 gives your output originality and style. Completely compatible with the 664.

COMPACTA - bold and heavy, good for emphasis
DATA-RUN - A FUTURISTIC SCRIPT
LECTURA LIGHT - clean and pleasing to read
MEDIAN - a serious business-like script
PALACE SCRIPT - a distinctive flowing font

Typical Tasprint output. Please note that different makes of printer produce different sized output.

TASPRINT 464 cassette **£9·90** disc **£12·90**

TASCOPY 464 The Screen Copier

A suite of fast machine code screen copy software for the CPC 464 and 664. Print high-resolution screen copies in black and white and also large 'shaded' copies with different dot densities for the various screen colours.

TASCOPY 464 also produces 'poster size' screen copies printed onto two or four sheets which can be cut and joined to make the poster.

TASCOPY 464 cassette **£9·90** disc **£12·90**



TASPRINT 464 and TASCOPY 464 drive the following dot-matrix printers:

AMSTRAD DMP 1, EPSON FX-80, EPSON RX-80, EPSON MX-80 TYPE III, MANNESMANN, TALLY MT-80, NEC PC-8023B-N, STAR DMP 501/515, BROTHER HR5, DATAC PANTHER, DATAC PANTHER II, SHINWA CP-80, COSMOS-80

TASWORD 464-D The Word Processor — with Mail Merge!

This is the new Tasword especially developed to utilise the capabilities of the CPC 464 and 664 disc drives. The additional facilities include a larger text file size and automatic on-screen disc directories during save and load operations. A major new feature is the mail merge facility. This gives multiple prints of your standard letters, forms etc., with each copy containing, for example, a name and address automatically taken from a disc file containing the data. This data can be entered using Tasword 464-D, or created using the Masterfile Program Extension package. A powerful and useful conditional printing facility is included — parts of a document can be printed according to user-specified criteria. Tasword 464-D will only run on, and is only supplied on, disc.

TASWORD 464-D disc **£24·95**

TASWORD 464 The Word Processor

"There is no better justification for buying a 464 than this program"
POPULAR COMPUTING WEEKLY, NOVEMBER 1984

Your 464 becomes a professional standard word processor with Tasword 464. Supplied complete with a comprehensive manual and a cassette which contains both the program and TASWORD 464 TUTOR. This teaches you word processing using TASWORD 464. Whether you have serious applications or simply want to learn about word processing, TASWORD 464 and the TUTOR make it easy and enjoyable.

TASWORD 464 cassette **£19·95**

TASWORD UPGRADES

Tasword 464 and Amsword owners: send your original cassette or disc (not the packaging) as proof of purchase and £13·90. Your original will be returned together with Tasword 464-D on disc.

Available from good software stockists and direct from:

TASMAN SOFTWARE

Springfield House, Hyde Terrace, Leeds LS2 9LN · Phone (0532) 438301

If you do not want to cut this magazine, simply write out your order and post to: TASMAN SOFTWARE Dept CPC Springfield House Hyde Terrace Leeds LS2 9LN

I enclose a cheque/PO made payable to TASMAN SOFTWARE Ltd
OR charge my
ACCESS/VISA no ____________

NAME ____________

ADDRESS ____________

ITEM	DELETE	PRICE
	disc/cassette	£
	disc/cassette	£
	disc/cassette	£
	TOTAL	£

Send me the FREE Tasman brochure describing your products for the Amstrad CPC 464 and 664 ☐ tick here

All Tasman 464 software is fully compatible with the 664.

☆ The erasing of files, cleaning up and backing up of disks is now much easier and better: only files that have been changed need now be backed up, the system tags a file that has been changed and can be set to copy only tagged files. The result is fewer 'backup' discs.

☆ One need no longer specify the drive when invoking a program. All drives can be searched for the program.

☆ Data or Text files can be kept in separate partitions of the directory (called 'User Areas'). There is an indication of which current user number is logged in and all 'system' commands (transients) can still be invoked from any user area. A bureau running a payroll program, for example, can keep the program as normal as a system file, and keep separate clients or departments in different user areas on the data disk. A word processing system can keep the program as a system file or USER 0 and can have separate groups of text files on up to 15 different areas. The possibilities of files being 'lost', erased or accidentally altered are greatly reduced by such a system. The contents of all user areas can be displayed by DIR.

☆ The ability to create and modify elaborate turnkey systems
using SYSGEN, PUT, GET, and ED. The process is much easier than before.

☆ Batch files (.SUB) can be invoked as if they were .COM files
without having to specify SUBMIT in the command line

☆ Input and output can easily be switched to one or more of a range of devices; for example, input can be redirected so that it is taken from both the keyboard and serial port. All output can be redirected to both screen and printer, or sent out to all five serial ports at once. Two users can avail themselves of the same program (taking it in turns), one being on a terminal for such purposes as stock control or database viewing, or one user can access his computer from one of five remote terminals. A program can send its output simultaneously to several remote terminals.

☆ Greatly increased speed of performance, rivalling or exceeding many existing 16-bit systems. Disc capacities can be increased, as there is no need for system tracks.

☆ Easier configuration of serial devices.

☆ Greatly enhanced features of all the classic CP/M transients such as PIP.

☆ Better and more understandable prompts, error messages and displays. CP/M itself requires less exactitude in such matters as drive specification.

☆ The HELP facility that gives rapid help on using CP/M commands. The HELP file can be expanded, altered or extended for particular applications.

☆ Extensive line-editing facilities, (the last command line can be recalled and edited).

☆ Several commands can be given on the one line.

☆ A complete development system with a relocating assembler, SID debugger, line editor and linker.

☆ An environment that can be extensively reconfigured to the taste of the user.

☆ Easy extension of the BIOS, to manage new mass-storage devices such as hard disks, floppy tapes, and digital laser discs.

☆ Sophisticated batch commands that can be nested, and which allow some conditional switching. The output of one file can become the input of the next (using GET and PUT).

☆ Wildcard commands can be used for ERASE and TYPE as well as PIP.

☆ Redirection of character input or output to or from disc files,
or one or more physical devices. Z80-based CP/M computers recently dominated the business microcomputer market.

Their loss is the amateur's gain.

The CPC 6128 has all the features of these machines but also allows the use of graphics and sound. Leaving aside for a moment its excellence as a games computer, it is worth explaining how it has the potential to do really useful work in business, science and education as well. In the beginning there was the 8008 microprocessor, visualised by its creators as a means of cheaply constructing such things as factory automation equipment, vending machines, calculators and the like. The idea that the humble chip would spawn the microcomputer revolution was unimaginable. The 8080 chip which succeeded the 8008, then formed the basis for the first microcomputers, generally constructed from kits and components by hobbyists. Gary Kildall, who wrote the CP/M operating system, had done some early development work on the 8008 chip and got together with John Torode to design the first plug floppy disk unit. It came complete with all the software and hardware. At that time, small companies in the States were beginning to produce microcomputers using the new silicon chips. They had as much as 8K of memory and used cassettes or paper tapes to load in the programs. Gary's CP/M was cheap, came with the essential software to get you started, and actually worked. CP/M's fame spread and it became the controlling software for nearly all the 8080 and Z80-based systems that were spawned in those exciting days. Because one could take ones 8" disc out of one machine, put it in a completely difference one and not only read the files on the disk but also run the programs, it made sense to write programs that would run under CP/M. Software writers were no longer chained to a particular piece of hardware. As long as the computer ran CP/M then it would run the program. The arrival of the cheap VDU or screen added a complication which led to the requirement that programs often needed installation to drive a particular terminal with its individual operating conventions. CP/M survived the demise of the 8080 as a microcomputer CPU as it would run just as well on the Z80. It was altered to allow it to run smaller disk drives. It developed into CP/M+, whose quality outstripped the 16-bit versions of CP/M86 or Concurrent CP/M. When the 16-bit computers took over the business market, PCDOS, which was developed originally from CP/M, took over as the supreme 16-bit operating system. The business community have now left CP/M behind. Their loss is now the amateur's gain, because more software has been written for CP/M than any other type. Ten years of software development work is now available to run on CP/M-based micros such as the CPC 6128. This represents real computing power.

ACU

Trivia

A family game for 2 to 4 players in which mum is just as much at home as the sports crazy son.
Over 2000 questions on six subjects like Entertainment - Sports - History.

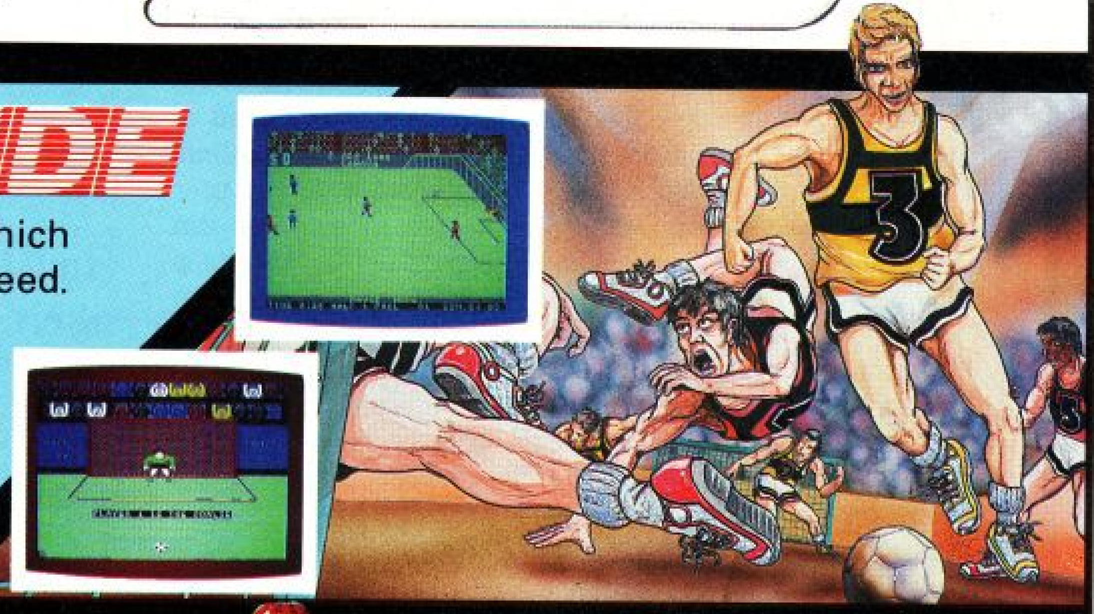
C64 - Amstrad - Atari - BBC - Spectrum £7.95



FIVE-A-SIDE

A soccer game with real pace in which passing skills are as essential as speed. Penalty shoot out truly tests your anticipation.
One or two player option.

C64 - £5.95
Spectrum AMSTRAD
Atari - BBC - MSX SOON



SLAP SHOT

A fast and furious game which requires skill and fast reactions. Ice Hockey is a tough game but persistent rough game is punished by roughing penalties.
One player or two player option.

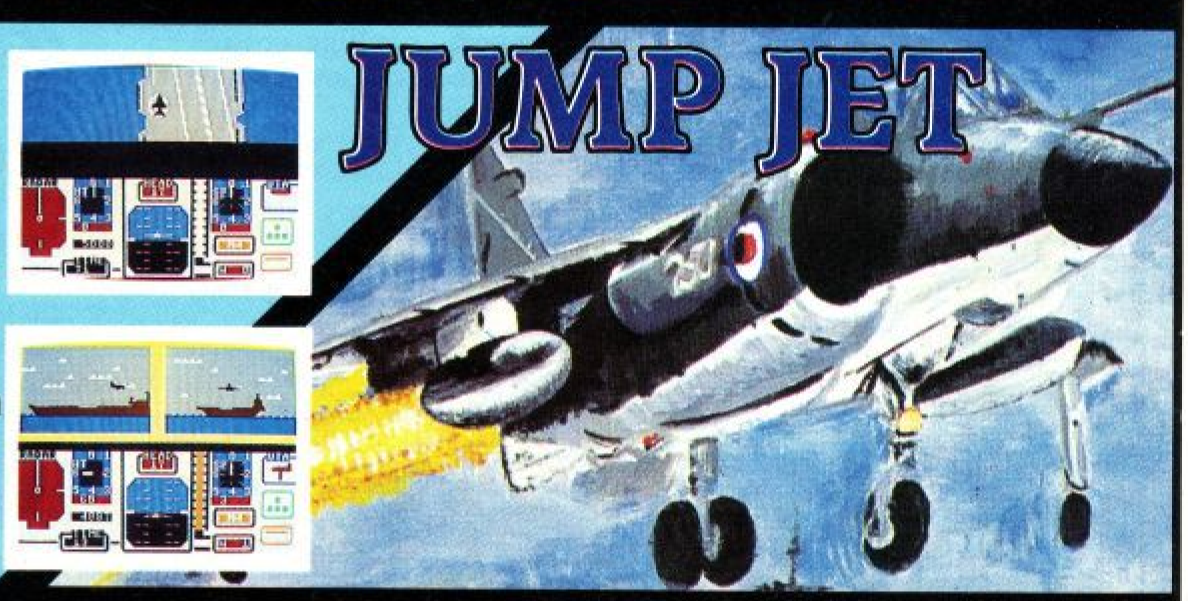
C64 - Amstrad - MSX £8.95



JUMP JET

Assume control of this unique fighting machine. Take care that you practice take off and landing thoroughly before you embark on a combat mission to seek and destroy the enemy aircrafts. Use your radar to locate the carrier and land in worsening weather conditions as you progress through the ranks.

C64 - Amstrad - BBC £9.95.
Atari - Spect - Electron SOON



VOICE MASTER

VOICE MASTER A unique three in one package.
Speech Reproduction - Speaks in your own voice. Easy to incorporate speech in your own programmes. Recorded speech does not require Voice Master for reproduction.
Speech Recognition - Imagine your computer actually understanding what you say.
Voice Harp - Just whistle or hum to produce music



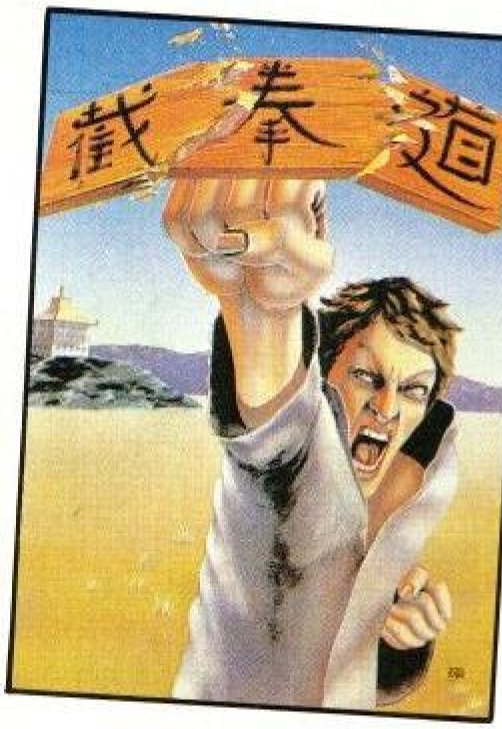
TRADE ENQUIRIES ANIROG Unit 10 Victoria Industrial Estate Dartford Kent 0322-92513/18
MAIL ORDER 8 High Street, Horley, Surrey. 029 378 6083
24 Hour Credit Card Service or pay by Cheque, P.O., Visa or Access

ANIROG

SOFTWARE REVIEWS

Game of The Month

The Way of the Exploding Fist



Melbourne House shot to fame with the Hobbit; the first detailed adventure with graphics and computer generated characters. Since then they have been building up a reputation for good arcade games. They have been a bit slow to produce Amstrad software, but this title is only a month behind the Commodore and Speccy versions so they are catching up.

The Way of the Exploding Fist is the best possible way for you to get into a fight with your friends. The game has one and two player modes. In the single player mode you take on a computer generated opponent. Early on he is easy enough to catch off guard, as you progress he becomes smarter and much more agile.

The program is based on an arcade game which uses two joysticks, this gives sixteen possible positions, to simulate this on a home micro Melbourne House use the fire button as a shift key so that all positions are possible. Remembering the moves is difficult; it simply boils down to a joystick move without the fire button, making your man travel across the screen. And, with the fire button, you strike out at your opponent. This is something of a generalisation since there are more ways of hitting out than there are of running about. Some of the moves rely on your being in a crouching position before pressing the button.

The conversion from a Commodore game has come off surprisingly well. The Commodore has hardware sprites, these may not be as flexible as full bit-mapped software sprites but they are a lot faster. This major difference does not harm the conversion. Some compromises have been made: the music only plays at the start of bouts and the movement is a little slower. The actual sprites are spectacular; large with smooth movements, they overlap correctly so that your left leg swings behind your foe with your right leg in front. Gameplay is what counts and here it is superb.

To practice the moves without the computer filling your face full of electronic sand each time you peer at the hint sheet, it is best to go into two player mode and try each move against the static opponent. Listening to his puffs and groans each time you wind him is enough to generate an evil smile on the face of even the most hard line pacifist. Once you have mastered the basic techniques it is time to take on the computer.

As the game progresses the tactics change, so the simple crouching kick which worked so well in the early stages loses its element of surprise and you tend to find yourself lying flat more often than not. To progress you will have to master somersaults, flying kicks and punches at close quarters.

Once you have got the hang of beating the computer it is time to take on a friend. Unfortunately Melbourne House have only implemented one joystick, so even if you have a JY2 your friends will have to use the keyboard. It would have been better if options had been given for one, two or no joysticks.

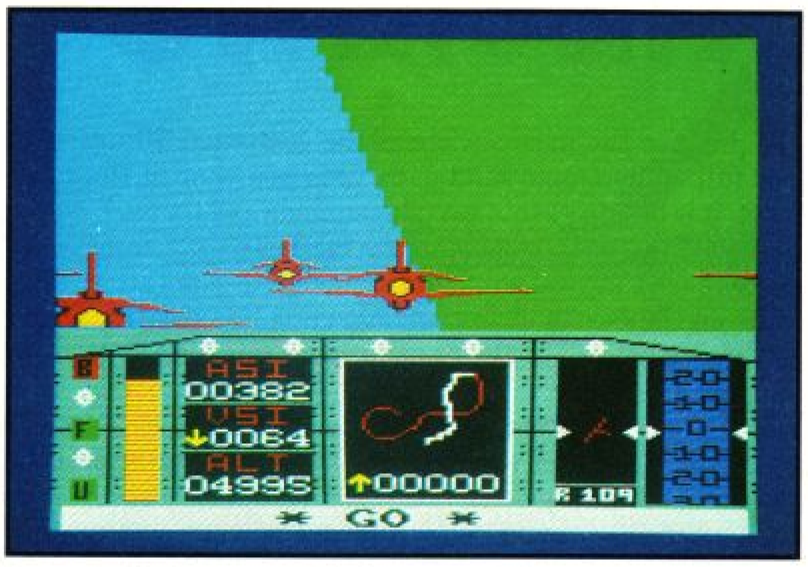
Scoring is not totally logical, for every move which results in your enemy falling there is a set score. To progress through levels, called dans, you need to win bouts. A victory requires you to light up two Ying-yang symbols, for felling your adversary you are awarded either one or half a ying-yang (Is that a ying?- Ed) depending on how well planted your blow was.



There are a couple of minor bugs in the program, neither of which harm the game in any way. The first is that the high scores are sorted in with the dan rating first and the score second, so a 1100 point first dan score will rate above a 20,000 point sixth dan score because one is less than six. The second bug is that the computer generated opponent splits down the middle if he beats you with the right hand side of the sprite becoming detached. I suppose Melbourne House would argue 'Don't get beaten'.

Author	Melbourne House
Price	£8.95
Format	Cassette
Graphics	****
Playability	*****
Addictiveness	*****
Overall	*****

Red Arrows



Anyone who has any interest in aviation will have heard about the crack aerobatic team - the Red Arrows. I have seen them several times at various air displays, and with my experience in formation flying and aerobatics, I can say without doubt that they are absolutely magnificent.

Having been invited to write a review on 'Red Arrows' by Database, I could not wait to load the program and have a go. Having flown almost every flight simulator for home computers, (and some bigger Redifusion ones) I looked forward to using a program that would, hopefully, live up to its name.

The version I test-flew was on cassette, and one side of the cassette failed to load after displaying a nice pair of Red Arrows. I don't know if the disc version has been produced yet, but, in any case, faster loading is something that everybody appreciates.

Half the manual for Red Arrows gives you a history of formation aerobatics and the Hawk's performance. Having been warmed up in this way, it is disappointing that the second half gives a very poor explanation of flying characteristics and exploitation of the aircraft. All those 'one key toggles' and 'building thrust against brakes so that you continue with the same overall thrust' are a bit daunting at first; and some of them stay so.

The graphics are nicely done; you can see the rest of the formation, and have a lovely view of the cockpit. Your instruments include a 3-dimensional plan of every individual figure, with your trajectory as a separate curve.

The speed is something that leaves a lot to be desired with this simulator. 'Fighter Pilot' by Digital Integration, is a good example of a beautiful performance on a true 8-bit home micro.

The figures you can fly in formation are of the best ones that the Red Arrows perform: the Big nine loop, the Pyramid roll, the Eagle Manhattan Loop, the Viggen Flypast, the Concorde flypast and it is left to your imagination to do any solo aerobatics that you can think off.

The response on the controls is very sluggish, and it does not vary with airspeed. The stall warning is a very interesting feature, tilting the aircraft from side to side.

The idea of a flight simulator is very good one, but I am afraid to say that the realisation of this marvellous idea has not been absolutely successful. If you want to have some fun, however, and say that you were flying in formation with the 'Big Nine', this is the program for you.

What is worth mentioning is that in the instruction booklet there is a competition entry form; and the prize - a weekend with the Red Arrows, overnight accommodation a a luxury hotel, a visit to the wartime home of the Dambusters, photographs with the Red Arrows team and in the cockpit of a Hawk. Also, a percentage of the revenue from sales of this game goes to RAF charities.

Author	Database
Price	£8.95
Graphics	****
Playability	***
Addictiveness	***
Overall	****

Sorcery +



Here it is. The long awaited disc version of the best seller "Sorcery". This time there are no problems with loading it from tape because it is only out on disc. Have to save up those pennies an' get a disc drive won't ya.

O.K., plugging over, now on with the game. Shove disc in drive, run it, graunch graunch: almost instant game. Bearing in mind that the last version filled the machine with about ten bytes spare helps you to understand why even the Amstrad disc drive takes its time digesting this one.

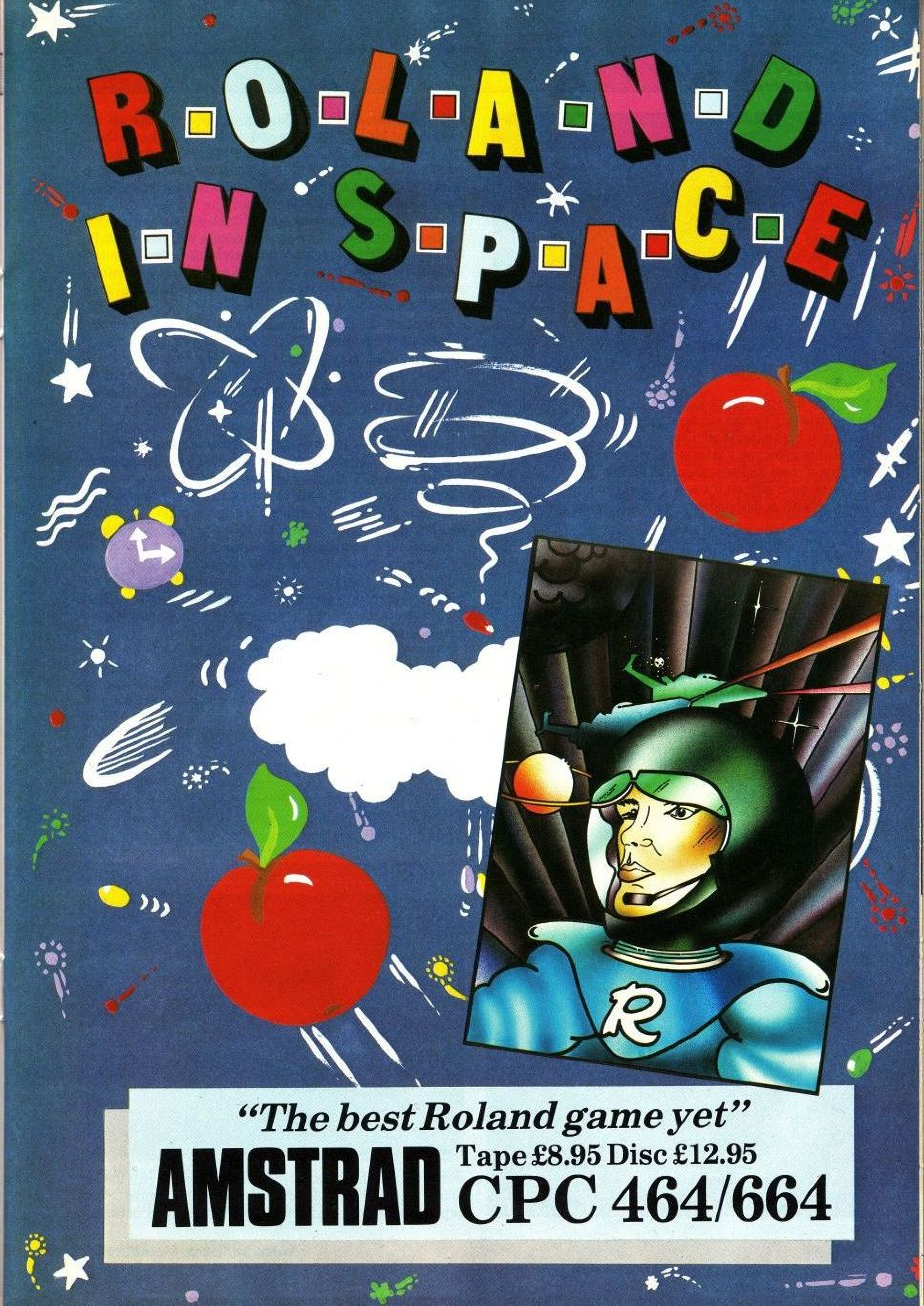
Next, you notice that the sound has been considerably jazzed up and the tune played is the good old "Sorcerer's Apprentice". This is also the point where you remember that this is joystick only and that you had better plug one in.

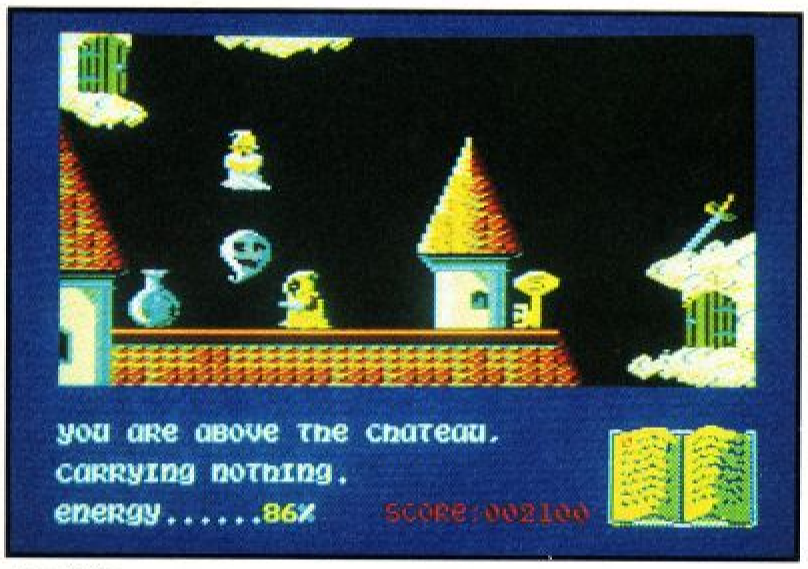
Then you get the high score table, of which the best ones are saved on disc for posterity and embarassment, so think before you call yourself "Flufkin the Magnificent" after scoring 50,000 points. A scrolling message plugging the game and Virgin from here to eternity then scrolls across the bottom. Later on, these messages get quite interesting and throw up the occasional on screen advert.

If you leave it alone, the game gets bored and goes into demo mode. Then it gives another message and a demo of the new bits and so on....

Most of the old favourite locations are there (with a few extra doors of course) but most of the sorcerers and grabbable bits have been hidden elsewhere and some of the doors are now a darn sight more difficult to get to. Happy hunting.

The axes, spells and shooting stars are just as effective as ever but when a baddie bites the magic dust now, he leaves behind a price tag à la defender and goes up the mystic spout with a wonderous wooshbang noise. There are of course new baddies and bits to bash them with. Only problem is you have got to get an awful long way in to the game to get to the


R·O·L·A·N·D
I·N S·P·A·C·E
"The best Roland game yet"
AMSTRAD
Tape £8.95 Disc £12.95
CPC 464/664



new bits.

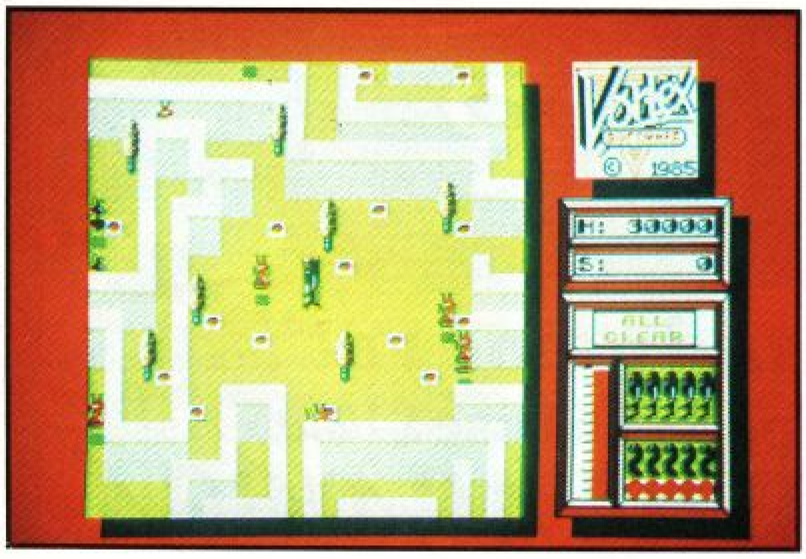
Another nice new touch to the game is the way the spooks and unfriendly monks etc. seem to grow up out of the floor when you first enter it as if sprinkled with Gro-More. This sometimes gives you a false sense of security when you first get into a room and see no enemies. Next thing you know, you have been sent on the way to that great magic show in the sky with a despondent tone after being got at by a ghoulie.

The inlay and scrolling messages reckon that you get a chance to get even with the necromancer. As much as I would like to get even with a necromancer, I could not rescue all the sorcerers (you got to do this first, see). This does not mean I have given up, just that I am a little bit out of practise. Soon fix that though ....

An intrepid sorceress has just cracked into the second half of the game and reports that it is filled with even meaner dwarves, vampires and even Rolands, not forgetting the dreaded Amstrad Computer User (this is quite useful really) and the Virgin Jumbo Jet.The necromancer is in there somewhere but all you see are the EYES. To bump him off, you surround him with hearts. Stay tuned for more news........

Author	Amsoft
Format	Disc
Price	£13.95
Playability	*****
Graphics	*****
Addictiveness	*****
Overall	*****

Android II



Not a bit like Android I, is this. For a start, it's all in newfangled 3D-type graphics and requires more brain than the last one because it's all taking place in a maze. Amazing.

You control a despondent frogman-type android and you have to pursue centipede lookalikes through a maze (map provided on request by belting 'M' key.)

To make it that little bit more difficult, you can only shoot it's head. Humane but tricky, as contact with the head is fatal. Someone has been hard at work littering the maze with anti-android mines, and I thought I had enough trouble with the pain in the diodes all down my left side. Here I am, brain the size of a planet.......

Sometimes the mines get hidden by the 3D scenery, centipedes etc. so there is a mine detector which squeaks and flashes if you are about to step in something unsavoury.

Oh yes, I forgot to mention, just in case you didn't think things were hard enough, the place is patrolled by sliding red things which look a little bit like daleks and a lot more like animated pillar boxes.

Moving your frogman (sorry, android) is quite tricky at first as he zips about at quite a clip especially when there is a mine or something else deadly straight ahead.

The graphics are in mode 1, not particularly exciting but you do get the chance to change them in the main menu so if you get sick of plain green everyday privet hedges you change to a more trendy red leaved privet hedge.

This program could be addictive to the right person (i.e. the Editor, who hates centipedes) but I found it unplayable at times and tended to rate slightly lower than the cat on the high score table. After much practice, however, I did eventually manage to beat the cat.

Editors note: Even I didn't manage to beat the five Militoids (centipedes to you) and make it back to the space capsule before it left but I did get totally hooked, this nearly made Game of the Month but was beaten into second place by an Exploding Fist.

Author	Vortex
Price	£8.95
Graphics	****
Addictiveness	****
Playability	***
Overall	****

Red Moon



Being new to the adventuring game, I have to say that I found the new Level 9 adventure very impressive. Past experiences have usually left me circling round between

four or five rather dull locations without a clue as to possible escape. Anyone else who recognises this syndrome and has been put off adventures would be well advised to have a look at 'Red Moon'.

This adventure is of the old school, (plenty of dragons, trolls and magic), and, if anything, this makes it more enjoyable than some of the other Level 9 titles.

The aim of the game is to locate and return a red moon crystal that is the source of magical power. Some devious soul has stolen the said object (Ya, Boo, Hiss) and it is your quest to return it (Hooray).

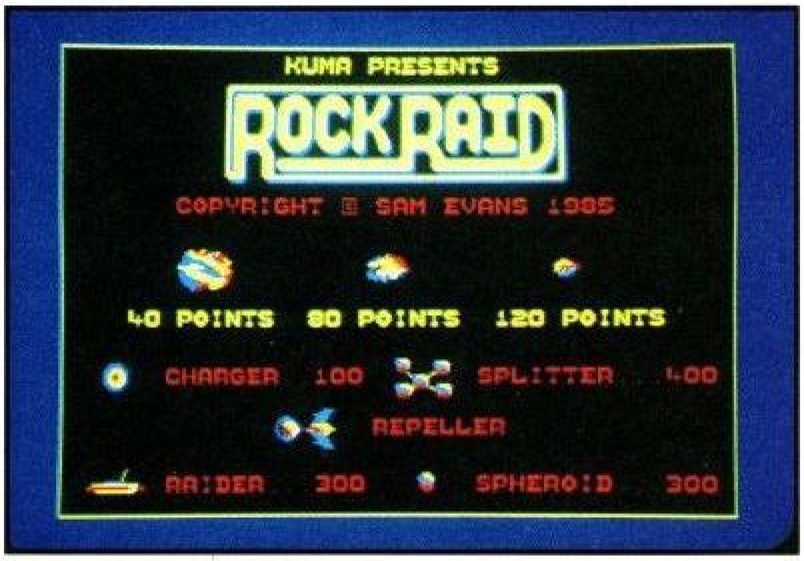
The area of play contains forests, volcanoes, cave systems and a castle that can be reached once you have drained the lake (this isn't too difficult, even I managed it at the first attempt). Various objects that you find have a special significance. That is, they can be used repeatedly to cast a particular spell depending on the type of object (for example, Lamp allows one to CAST the FIND spell which will give a brief glimpse of an object's location).

One thing I would advise anyone starting an adventure is that it is absolutely vital to make a map. In only two or three hours of play, I managed to visit around 70 rooms, though the game actually contains more that 200, so I still have a long way to go. Another thing that helps to liven up this adventure is that every location has a half screen picture that helps to set the scene for those of us who have no imagination. Don't expect a Breugel; the pictures are quite basic but locations such as the castle have quite a reasonable amount of detail. To allow full text descriptions to fit on the screen, the pictures can be switched off.

Red Moon, like all the Level 9 adventures, is a very high quality program, both in content and the competency of programming, and will provide a perfect introduction for novice adventurers as well as old hands.

Author	Level 9
Format	Cassette
Price	£6.95
Graphics	***
Playability	*****
Addictiveness	****
Overall	****

Rock Raid



There are two games that people remember as being the typical scourge of the arcades in days long past: Space Invaders and Asteroids. Having always said that nostalgia ain't what it used to be, I was pleased to see somebody has put one of them on the Amstrad at last.

Kuma seem to have recovered from their universally decried Siberian/North Sea Adventure fiasco and hit back with a classic that makes up for it.

You all know the plot, spacecraft in space with one forward laser and trying to share space with some large tumbling rocks. Simply convert big rocks into small ones. People used to be given that as a punishment, you know. I only mention the plot again just in case you have been living in Outer Mongolia writing adventures for Kuma for the past ten years.

The original was on a one colour vector display but Kuma have improved things and used the four available colours in mode one to create a more realistic 3D effect. The sound effects are varied and up to Kuma's usual standard. In order to dodge the rocks in an unavoidable and catastrophic situation, the good old hyperspace is there but this can be replaced by a number of new options.

Instead of leaping out of hyperspace and landing in a rock, it is now possible to flip round, go into reverse, put up a shield or use a smart bomb. With shields and smart bombs you only get three cracks at it and the smart bombs do not wipe out asteroids. The 'Pot Luck' option is good for a laugh.

Do you remember the little UFO that used to appear in the arcade version? Well, the smart bombs are needed because he and his friends from the galaxy next door have come back for revenge. The worst is the one that looks like a collection of cannon balls. When hit, it fragments into a horde of little balls that leap erratically over the screen like a drunken dance troupe.

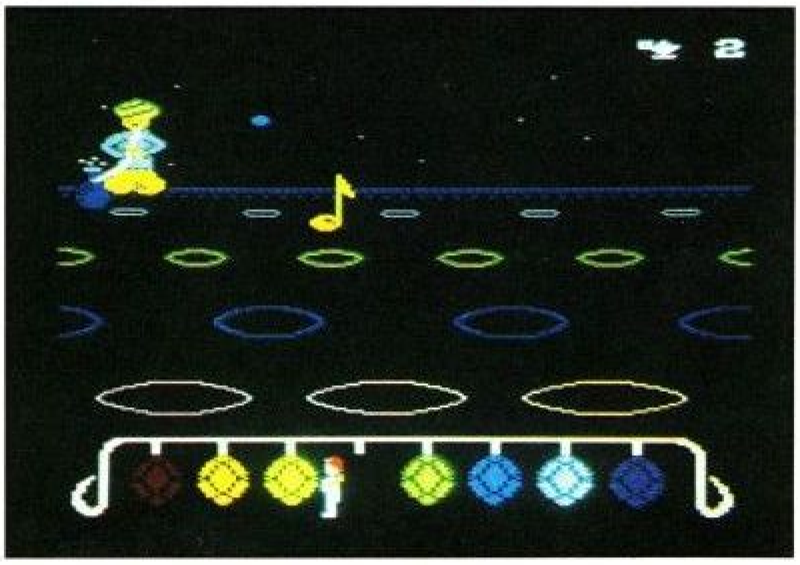
Your ship rotates evenly but the boulders flicker a bit as they tumble, a sort of rock 'n' roll. This is especially noticeable when two rocks overlap and one of them is "squared off" by the sprite routine.

This is not the sort of game that you should play whilst waiting for your pizza to cook, it ends up looking like it caught a laser blast.

In tests, eight out of ten cats said their owners preferred margerine to burnt pizza.

Author	Kuma
Price	£6.95
Graphics	***
Playability	***
Addictiviness	****
Overall	****

The Master of the Lamps



Activision are just as American as Macdonalds, apple pie and Wico joysticks. As a result their software starts life on the Atari or Commodore 64 and is then converted to run on the Amstrad. As each game is designed to make the most of the first machine, the translation process does not produce a game which makes the most of the final machine. Master of the Lamps started life on the Commodore 64. This has a better sound chip than the CPC464 but poorer graphics. No attempt has been made to beef up the display, so, despite the excellent music on the '464, Master of the lamps has lost some of its charm.

The plot is very simple. In true Arabian fashion, you have seven tasks to complete. For each one, you are awarded a segment of a magic lamp with which to trap a rogue genie. The object of the game is to collect all seven segments.

The tasks are all the same. You have to fly a magic carpet through a tunnel to reach the genie's lair. The sequence is similar to the tunnels in 'Dark Star' or the arcade game 'Tac-Scan'. It would have been much nicer if this had been done in mode 1 rather than the chunkier mode 0 which is used. Activision expect you to memorise these tunnels and even supply a version which consists of just flying through the tunnels without a lair at the end. In practice, you can get by just looking far enough ahead.

The lair is the main part of the program, this is a refined 'Simon' type game. Hitting one of the gongs three times causes the genie to appear. Simply hitting once or twice sounds the gong; so, unless you have read the instructions, you are likely to be waiting a long time for something to happen. The genie blows note-shaped smoke rings which tumble towards holes in the ground. You have to hit a coloured gong to produce the same sound before the note reaches the hole. If you fail, you have to ride the magic carpet through the tunnel again.

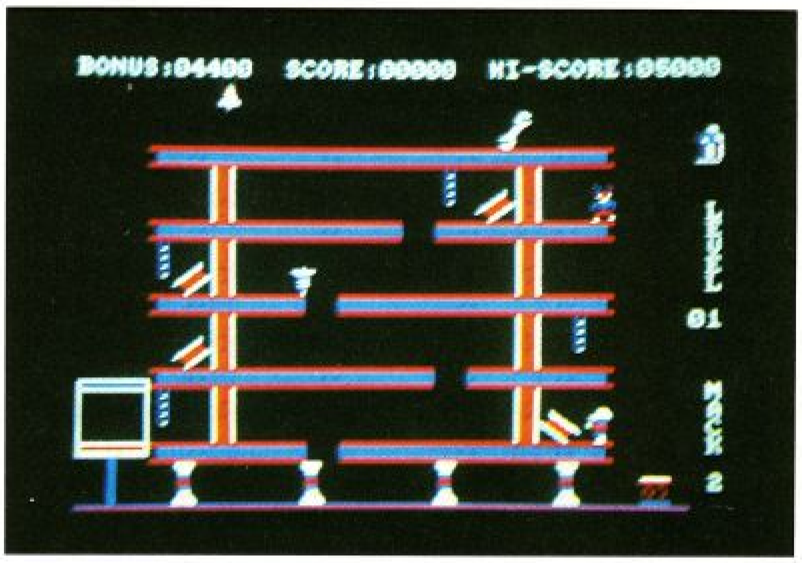
You do not have a set number of lives in 'The Master of the Lamps', the worst that can happen is that you may be sent back to the beginning of the last tunnel. This means that however badly you play, you can get to the end and, if you persevere for long enough you can complete the game. I got bored before I finished.

Author	Activision
Format	Cassette
Price	£9.99
Playability	***
Graphics	***
Addictiveness	**
Overall	**

Hard Hat Mack

This is another platforms and ladders (or in this case, chains) type game which was converted from the Commodore 64 (this is the version the screen shots on the inlay came from). The inlay says that this kind of game makes your beer taste better, but this is not true and the reliability of tape loads is reduced. It took me two goes to load the thing after dunking it in my beer.

You control a small, hard hatted and thick headed construction worker who runs about the site collecting girders and riveting them in place. On higher levels, the idea is to run around collecting toolboxes and dropping lumps of steel into rivet-making machines. This is not exactly riveting stuff, so a few hazards have been added. There could have been several midget judges. You know; some of those small things sent to try us, but they are more mundane than that.



Also flying around the screen are some rogue rivets (fatal) and a rivet gun. This is useful for riveting the building together (what else do you do with a riveting gun? Stuff turkeys ?). There is a snag with the rivet gun, once you have picked it up, you can't put it down, despite what the instruction inlay says about hitting the 'Z' key.

The baddies cannot be destroyed, deflected or thumped in any way. You can only try to avoid them by climbing chains, bouncing off springboards and accidentally falling down lift shafts. If you miss the springboard, an absolutely no expenses spared at all sound effect announces the non-existence of an ex-construction worker.

The graphics are fairly fast moving, done in mode one (four colours) and are XORed. This means that when the little man runs into a pillar, vandal, porta-poti etc. the graphics look a trifle confused. This happens on sorcery too, but in that case the rest of the effects make up for it.

This is not an outstandingly good game, or an absolutely crummy one either. If you want to add another platforms and ladders game to the collection, you could do worse than this.

Author	Ariolasoft
Format	Cassette
Price	£8.95
Graphics	**
Playability	**
Addictiveness	*
Overall	**

North Sea Bullion Adventure

The editor would not let me use the word "unprintable" to describe this game so I will have to make do with eeeeuch! (That exclamation mark was done with feeling folks). It is very similar to another game that will be reviewed next month. I won't tell you which one, you can guess.

The whole game is absolutely abysmal.

It is written in BASIC and protected so that you can't look

at it, but why you should, I do not know.

This obviously cannot be written by the usual farmyard of programmers at Kuma, who have produced such excellent games as Fruity Frank and Star Avenger. The programmer responsible for this crock of fertilizer clearly cannot program even in BASIC and ought to be dropped by Kuma or, failing that, shot.



The game itself is 16 blocks long with no loader screen. After loading, it gets its data sorted out and asks you to engage the caps lock. Have these people never heard of the UPPER$ function in BASIC? Still, you move on and are asked if you want the instructions.

When you get on to the game, you discover that it is about as user-friendly as an income tax form and as exciting as the contents of a ping-pong ball. Oh yes, there are pictures in it. Awful blocky things which take ages to draw and tend to look much the same anyway.

To get anywhere at all in this game, you must first buy various vital stores. This is supposedly accomplished by typing, say, OXYGEN followed by a number of carriage returns depending on how many you want. No chance: that will teach you not to believe everything you read. In actual fact it says "you can't OXYGEN". Undaunted, I typed : BUY OXYGEN. Better: my oxygen level went up one. Ah! Now should I hit return. No, it helpfully says that I can't.

This means that I had to type the same thing in half a dozen times, which wears a little on the patience. Whilst I am knocking the verbage side of things, it is very fussy about which words you use. For example ; you must type in BUY FUEL OIL. Typing BUY FUEL or BUY OIL gets a "you can't buy..." message.

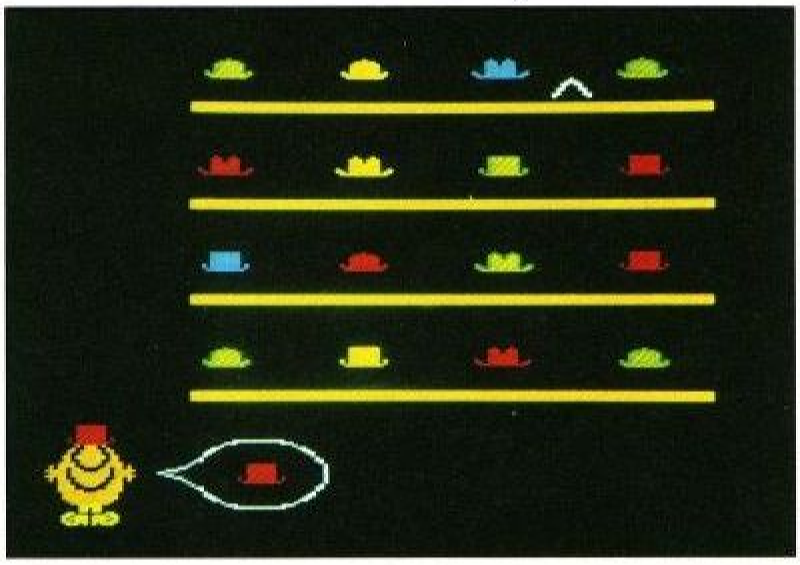
This game would not even make a bad magazine listing, as a commercial piece of software it plumbs new shallows.

Author	Kuma
Price	£3.95
Graphics	*
Playability	*
Addictiveness	*
Overall	*

First Steps with the Mr. Men

The pack contains three games (they actually claim four on the pack, but the fourth is a just a derivation of the third game) featuring the popular Mr Greedy, Mr Silly and Mr Forgetful characters of Roger Hargreaves. The games are written for children in the age range 4-8. The games are simple, but bright, colourful and appeal to children. Also with the pack comes a set of stickers showing Mr Clever, which can be put on the cursor and copy key cluster which is used to control the Mr. Men during the games.

The first game is Mr. Greedy's ice-cream hunt. In one of the corners of the screen is an ice-cream, Mr. Greedy must be directed to the ice-cream using the cursor keys. This is easy the first time round as there are no obstacles, but in subsequent attempts, walls are added to the screen which Mr. Greedy must be manoevered around. After four ice-creams the game starts again from scratch.This is a pity as I think most children could sucessfully attempt a few more levels of difficulty.



The second game is Mr. Silly's hat game. Mr. Silly is in a hat shop. On the shelves are hats of various shapes and colours. A speech bubble coming from Mr Silly's mouth shows the shape and colour of the hat he wants to try on next. A pointer can be moved by use of the cursor up and cursor right key, when the pointer is under the required hat, pressing the [COPY] key will remove the hat from the shelf and place it on Mr. Silly's head.

The third game is on the second side of the cassette and is Mr Forgetful's Wardrobe game. There are two rows of six wardrobes. Each wardrobe contains an items of clothing - a sock, mitten, ice-skate etc - and in one of the wardrobes, on the opposite side of the room, is the matching pair. Move Mr. Forgetful to one of the wardrobes and open the doors to reveal the contents, then move him to the opposite side of the room and open one of those wardrobes. If both the items match, the doors remain open and Mr Happy appears, if they don't, the doors close again but remember which item is in each wardrobe as this will help you solve the puzzle quicker. When you have located all six pairs the game is finished. As a derivative of this game you can elect to have letters instead of clothes appearing in the wardrobes.

Author	Mirrorsoft
Format	Cassette
Price	£8.95
Graphics	****
Playability	****
Adictiveness	***
Overall	****

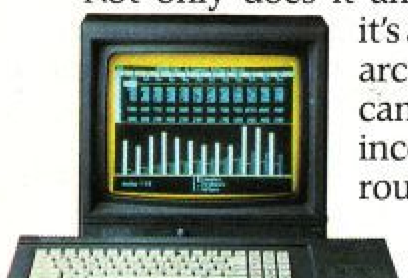
ACU

It does accounts, projections,



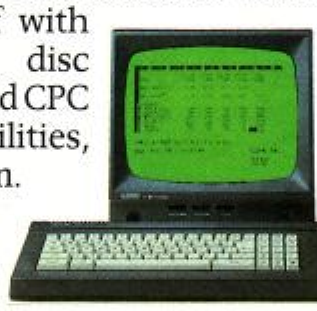
No wonder people are racing out to buy Amstrad's new CPC 6128 computer.

Not only does it answer all your business needs,



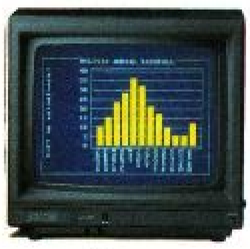
it's also compatible with nearly 200 arcade and adventure games. So it can either speed you through your income tax returns or whizz you round a simulated Silverstone.

On the business side we start you off with a free disc which introduces you to the Amstrad CPC 6128's impressive range of capabilities, and the best ways to exploit them.



You'll discover how its massive 128k memory can open the door to over 8,000 C.P.M. applications.

Programs like 'Wordprocessing' and 'Database' will file and index records, produce standard letters, mailing lists and even compile reports.



There's a series of business control programs which form a complete invoice, stock control and statement system.

In other words it's easy to choose the software you need to take the big problems out of your small business.



But even if you don't own a business there are plenty of good reasons for owning an Amstrad CPC 6128.

It makes short work of the problems we all face. Like keeping track of rates, mortgage and H.P. payments.

However even software packages as comprehensive

AVAILABLE AT BOOTS · BRIDGERS · CLYDESDALE · COMET · CURRYS · DIXONS · GRANADA · GREENS · LASKYS · JOHN LEWIS · RUMBELOWS

wordprocessing and 180mph.



as Amstrad's are only as good as the hardware they're loaded into.

You need a complete system.

That's why the Amstrad comes complete with a built-in disc drive as well as a monitor (green screen or full colour). So it's ready to go to work as soon as you get it home.

And if you want to go further additional disc drives, printers and joysticks are all available to ensure that your computer can grow with your growing needs.

Finally there's one feature of the Amstrad CPC 6128 that's both good business and a pleasure: the price.



With Colour Monitor around	**£399**
With Green Screen around	**£299**

Tell me more about the Amstrad CPC 6128

Name ______________________

Address ______________________

____

____

____

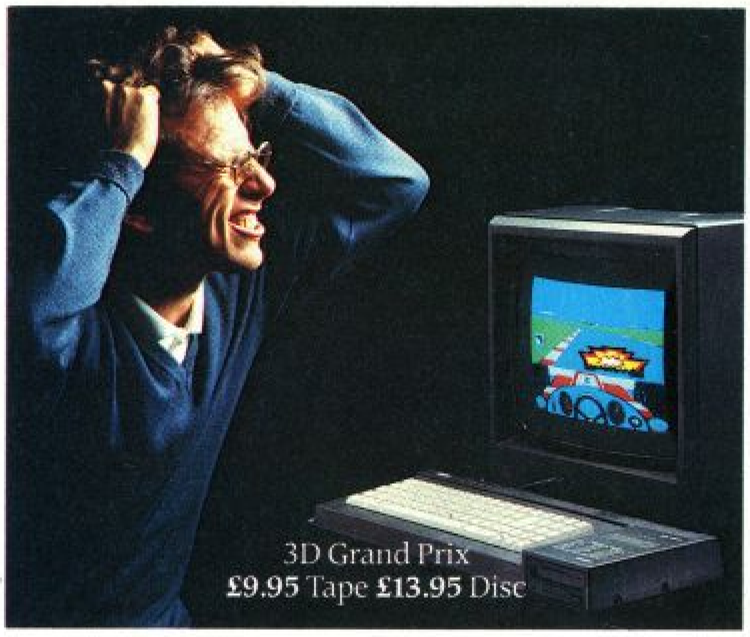
The Amstrad CPC 6128

Who says business and pleasure don't mix?

Amstrad P.O. Box 462, Brentwood, Essex CM14 4EF.

SUPREME DISCOUNT STORES · TANDY · VALLANCES · W. H. SMITH · WIGFALLS · F. W. WOOLWORTH AND GOOD INDEPENDENT COMPUTER STORES





When it comes to computer games you can't beat an Amstrad.





We've enlisted the help of some particularly wicked program designers to put our entertainment software range together.

They've come up with over 200 Arcade and Adventure games.

Many of them exclusive to Amstrad (like those shown above). All of them mindbenders you'll find hard to beat.

And all at prices that are as competitive as the games, from £12.95 on disc and £8.95 on tape.

But the software is only one of many good reasons for buying an Amstrad computer.

The 64k CPC 464 computer comes complete with built-in cassette deck and either a superb quality full colour monitor or green screen.

The CPC 6128 is a big memory 128k computer with built-in, fast-loading disc drive and again, it's own colour monitor or green screen.

Both are available at an all-inclusive price you'll find hard to match.

In fact, with Amstrad's unbeatable software, unbeatable hardware and unbeatable prices, how can you lose?

Tell me more about the Amstrad range of software.

Name____________________

Address____________________

____

____

Amstrad. Loads more fun.

Amstrad, P.O. Box 462, Brentwood, Essex CM14 4EF.

AVAILABLE AT BOOTS · BRIDGERS · CLYDESDALE · COMET · CURRYS · DIXONS · GRANADA · GREENS · LASKYS · JOHN LEWIS · RUMBELOWS · SUPREME DISCOUNT STORES TANDY · VALLANCES · W. H. SMITH · WIGFALLS · F. W. WOOLWORTH AND GOOD INDEPENDENT COMPUTER STORES

cp software — Spectrum · Sinclair QL · Commodore 64 · AND NOW for **AMSTRAD** CPC 464 or CPC 664

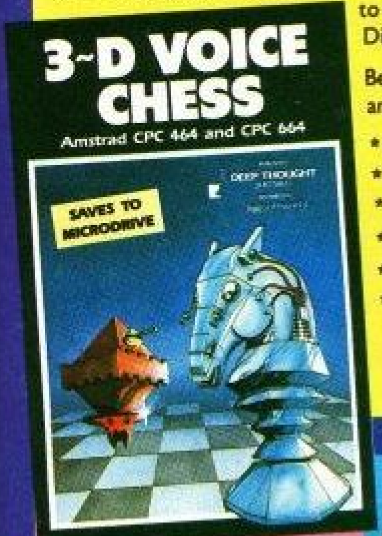
THE STRONGEST VERSIONS OF THE CLASSIC GAMES . . . *from good retailers or by mail order*

3-D VOICE CHESS

With Soft Speech — Patent Applied For

NEW STUNNING TECHNICAL INNOVATION

Unique new program by Superchess Author Chris Whittington. — Brings you all the playing power of our original Amstrad Superchess, plus ***SPEECH*** and **brilliant 3-D graphics**. Specially developed program available only on Amstrad that brings you all the strengths of Superchess enhanced by the latest developments of sound and vision. Saves to CPC 664 Disc





Beginners to expert levels and classic helpful features

* Analyse mode
* Problem solving
* Large opening library
* Help Menu
* Change colours
* Recommended move

ANY AMSTRAD £12.95

3-D SUPERCHESS 4·0

"Brilliant 3-D graphics
* *Save Game and Program to disc*
* *On screen clocks for tournament realism*
* *Unique new way of setting hundreds of levels*

STRONG *— Faster, more intelligent*

FAST *— from 5 seconds to tournament times*

PENETRATING *— at tournament levels it searches at least 7 moves deep, trying tens of thousands of lines of play.*

FRIENDLY *— Keeps you informed. Ideal for the expert or as a tutor for beginners.*

SAVES *— to CPC 664 disc to save you time*

Guaranteed to consistently beat any Spectrum, Amstrad or Commodore chess program

Dedicated to excellence in the game of chess

ANY AMSTRAD £12.95

FEATURES

* *Unique new way of setting levels by time gives you total control with three different options: tell the computer to match your response times, give it a time limit to play to, or give it an average time to make its moves. And you can force it to play its best move found so far . . .*
* *Change sides and levels during play if required*
* *Stop the game and change positions at any time*
* *Set up particular games you want to try at any stage*
* *Will recommend your best move when asked*
* *Extensive library of opening moves*
* *TOTAL INFORMATION about the computer's thought processes, including: best line of play found so far, number of positions evaluated, depth of search, internal scoring system, display of previous moves if required, help menu if you should ever get stuck.*
* *Can be set to solve problems up to mate in four*
* *Option to determine your own display and piece colours*
* *Absolutely suitable for beginners — just set the minimum move time*
* *Fascinating self-play mode for you to study the game*
* *You can play blindfold chess*

BRIDGE PLAYER

For AMSTRAD, Spectrum, QL and Commodore 64

The Strongest AMSTRAD Bridge Player yet

Play Bridge, just as you would at the table, with random deal, authentic ACOL BIDDING (Stayman and Gerber conventions), cumulative scoring, replay/rebid options.

PLAYS AS EITHER DEFENDER OR DECLARER.

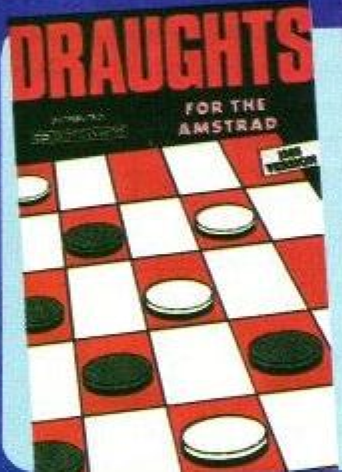
— A REALLY STRONG OPPONENT FOR A REALLY GOOD GAME OF BRIDGE. EXCELLENT PRACTICE WHATEVER YOUR LEVEL OF SKILL.

"Excellent"
HOME COMPUTING WEEKLY Feb 1985

ANY AMSTRAD £9.95

SPECTRUM £9.95 SINCLAIR QL £18.95 COMMODORE 64 £9.95





DRAUGHTS -CHECKERS

For AMSTRAD and SPECTRUM

Never underestimate the brains needed to master the classic game of ordinary men throughout the world. This dynamite program by Chris Whittington takes you from beginners level to what Sinclair User called **"the Karpoy of the Draughts world"**. Complete with strategic hints, kings and several levels to challenge you.

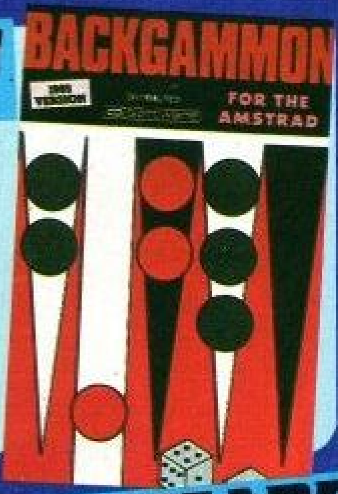
ANY AMSTRAD £8.95

BACKGAMMON

For Amstrad and Spectrum

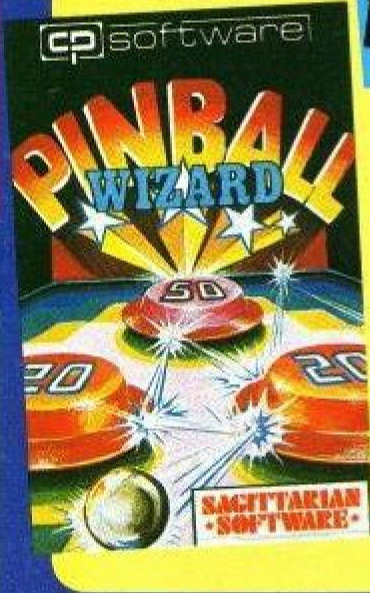
Easy to learn but plenty to challenge you in this high-speed version of the great dice classic. Superb graphics and a very intelligent playing strategy which gives you a run for your money. Complete with rules and tactical hints.

ANY AMSTRAD £8.95



PINBALL WIZARD

for AMSTRAD, Commodore 64 and Spectrum



Superb, colourful fast-action graphics and sound give this game the feel of a real arcade pintable. Realistic launch, flippers, bumpers, highscore, bonus scores and freeball features. Be a Wizard!

". . . I thought that a few minutes would suffice, and then found that a couple of hours had passed and I was still at it. Excellent . . . Pinball Wizard has it made." **CRASH MAGAZINE**

"A brilliant idea that's totally absorbing and so addictive . . ." **YOUR SPECTRUM**

"The display is well-designed and colourful and ball movement is very realistic"
PERSONAL COMPUTER GAMES

ANY AMSTRAD £8.95

WATCH THIS SPACE

CP SOFTWARE is working now on several new programs for the Autumn, to include: more classic games, strategy games, utilities and disc software. We believe in the future of the **Amstrad** computers and intend to provide quality software for them. Please contact us for further information (SAE) or send in any good programs you think would fit with our style.

CP products are sold in **BOOTS, WH SMITHS** and all good retailers. **TRADE ENQUIRIES WELCOME AT THE ADDRESS BELOW. IN CASE OF DIFFICULTY** contact us for instant mail order.

MAIL ORDER
Simply state which programs and send cheque, postal order or Access number (with expiry date). Telephone for instant credit-card orders. Send SAE for catalogue and return postage for submitted programs.

SPECIAL OFFER £1 off any two programs, £2 off any three, by mail order only.

DELIVERY by soonest post. Post free in U.K. Europe add 80p per program. All other places add £1 per program for surface mail or for Airmail add £2 for first program and £1 for each additional.

WANTED: Strong and original programs of an intelligent nature for any of the above computers. Top royalties paid by this reliable company.

cp software
Dept (AMU1), 10 Alexandra Road, Harrogate, North Yorks HG1 5JS Tel: (0423) 57089

ESP THE PEN THAT LIKES TO SAY YES

ELECTRIC STUDIO PEN

FEATURES/ FUNCTIONS	ESP	dk'tronics	Any Other
SINGLE COMPLETE ON SCREEN MENU	YES	NO	Please compare any other pen package currently available
DRAG SCREEN OBJECTS	YES	NO	
FLIP SCREEN OBJECTS	YES	NO	
CURSOR REMOVAL	YES	NO	
ELASTIC BOXES	YES	YES	
ELASTIC LINE	YES	YES	
ELASTIC TRIANGLE	YES	NO	
ELASTIC ELLIPSE	YES	NO	
ELASTIC DIAMOND	YES	NO	
ELASTIC POLYGON	YES	NO	
ELASTIC HEXAGON	YES	NO	
ELASTIC OCTAGON	YES	NO	
ELASTIC CUBE	YES	NO	
ELASTIC PYRAMID	YES	NO	
CIRCLES	YES	YES	
SOLID CIRCLES	YES	NO	
SOLID BOXES	YES	NO	
SOLID ELLIPSES	YES	NO	
WEDGES	YES	NO	
BEZIER SIMULATIONS	YES	NO	
ZOOM EDIT	YES	YES	
REVERSE/MIRROR IMAGES	YES	NO	
REFERENCE BACKGROUND	YES	NO	
GRID BACKGROUND	YES	NO	
X,Y DISPLAY OPTION	YES	NO	
PAINT FILL	YES	YES	
COLOUR WASHING	YES	NO	
RESIDENT SCREEN DUMP	YES	NO	
3D EDGE PLOTTING	YES	NO	
TEXT	YES	YES	
9 BRUSH SIZES	YES	NO	
18 SPRAY NOZZLES	YES	NO	
4 BASIC TEXTURES	YES	NO	
TEXTURE VARIATION	YES	NO	
XOR TEXTURE SHADING	YES	NO	
RESIDENT SYMBOL/SHAPE FILE	YES	NO	
RESIDENT FLECK PRINT FILE	YES	NO	
26 PAPER COLOURS	YES	NO	
15 COLOUR/TONE PALETTE	YES	NO	
POINT SETTING	YES	YES	
FIXED POINT RAYS	YES	NO	
MIRROR DRAWING	YES	NO	
HOME FUNCTION	YES	NO	
KEY CONTROL NUDGE	YES	YES	
JOYSTICK NUDGE	YES	NO	
AVAILABLE FOR 464	YES	YES	
AVAILABLE FOR 664	YES	?	
MODE 1 & 2 AVAILABLE	YES	?	

DUE TO LACK OF SPACE, WE ARE NOT ABLE TO LIST THE OTHER 20+ FUNCTIONS OUR PEN IS CAPABLE OF.

AVAILABLE FOR: CPC464 ON TAPE £19.95

CPC464 ON DISC (incl. Interface) £26.95

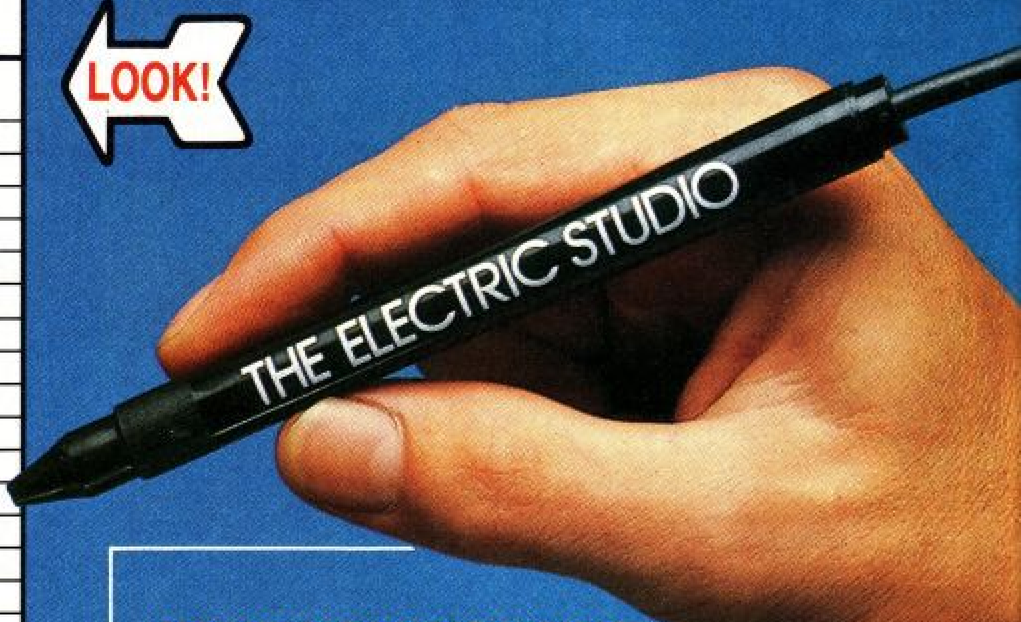
CPC664 ON DISC £26.95

Also available: High Res Graphics Program for more serious applications (includes both Mode 1 and Mode 2)

TAPE £9.95 OR DISC £14.95

WHILST OUR COMPETITORS MOSTLY SAY NO!

LOOK!



JUST SOME OF THE THINGS YOU CAN DO WITH THIS COMPLETE LIGHT PEN PACKAGE



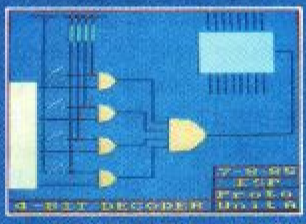
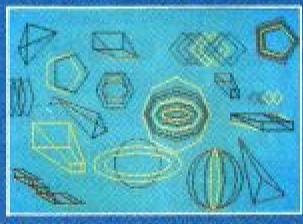
USER DEFINED CHARACTERS




FREEHAND DRAWING WITH THE GRAPHICS PROGRAM




GAME SCREEN DESIGN WITH COLOUR EDITING FACILITY

SCHEMATIC AND GEOMETRIC DESIGN DRAWINGS

AVAILABLE FROM ANY GOOD COMPUTER STORE

If you have any difficulty obtaining our products, please send cheque/P.O. to:

THE ELECTRIC STUDIO

P.O. BOX 96, LUTON LU3 2JP Tel: (0582) 595222

Okimate 20 Printer

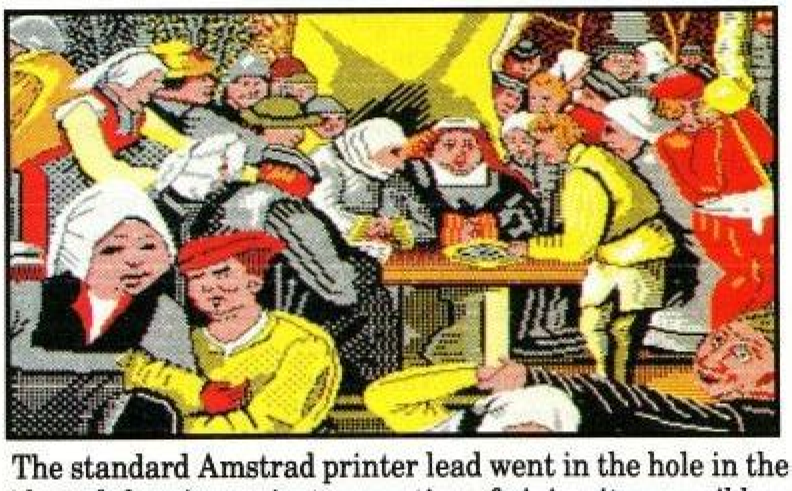
Okimate 20 Printer
Okimate 20 Printer



This has to be one of the cheapest colour printers on the market. For your £259 (or £299 for those unfortunates who are not members of the User Club) you get: the printer, colour cartridge, black cartridge, paper, and an instruction manual in a box that ought to stand up to the worst the G.P.O. can throw it at.

Included in the Amstrad version is a printer cable and an 8k buffer inside the printer to boot. The review model also had some software on tape which is to be issued with the Amstrad version. Putting the simplicity and idiot-proofness of the printer to the test, I delved straight into the packaging with screwdriver and plug at the ready and without a glance at the manual (who reads them anyway), got stuck in.

Surprise number one was the plug. Nobody puts plugs on things these days - except Okimate that is. I am assured that the one I found on the end of the mains lead was not a fluke (only livers and whales have flukes don't they?), and that they are all actually fitted with one. (That's the plug, not the fluke.)

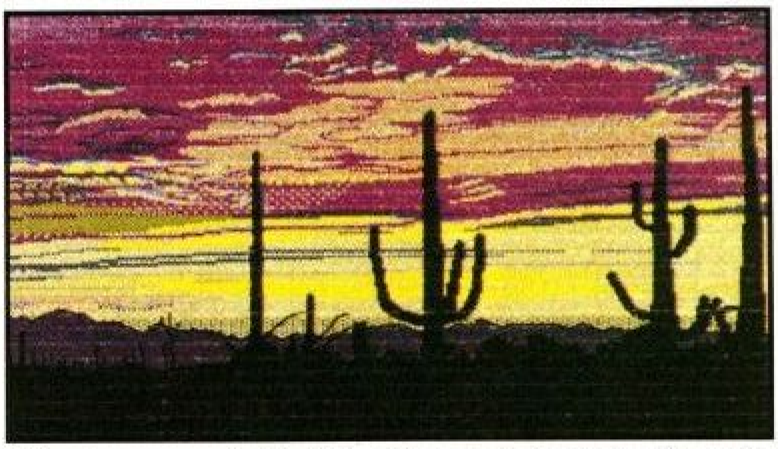


The standard Amstrad printer lead went in the hole in the side and then it was just a question of giving it some ribbon and paper to eat before getting started.

The ribbons were a piece of cake. Prise open top of printer with thumbnail, push back head, drop in cartridge and shut lid. Look Mum, Clean hands! In fact the whole design of the OM-20 is distinctly modular, with the print head (life of over 10 million characters) and even the main circuit board popping in and out as units. The circuit board modules can be changed for RS232 and Incredibly Big Machines versions. They simply slide in and out. This is just as well because the DIP option switches are concealed on them.

The paper and some acetate film were easy to load in as single sheets after I had removed a small piece of expanded polystyrene from the mechanism. Okimate tell me that this is not fitted to the printer as standard.

Tractor feed paper was a lot more tricky though. The sprockets have to be lined up with the sprocket holes or the machine chews and tears the paper. Unfortunately, you cannot see the actual sprockets on the Okimate because they are under the roller which makes it hard to line up. Fortunately, the printer does have some registration marks on it for the more common widths of paper. The first time I tried it, it took about four sheets of crunched and mangled paper before getting the hang of it. Once you have done it though, it is much easier the next time round.



The arrangement of putting the sprockets under the roller also solves the perennial problem of having to waste the first sheet of paper because half of it is needed to reach the tractor feed mechanism. With the Okimate, the paper goes through the tractor feed mechanism before being printed on. The tear bar works and cuts the paper in a nice straight line, not diagonally upwards into your text.

On power up, a green light came on and the printer hissed slightly as I fed it a test message from BASIC. Despite the lack of noise, the message was printed out in letter quality. Not near letter quality, but something I would quite cheerfuly write to my bank manager asking him for a largeish loan.

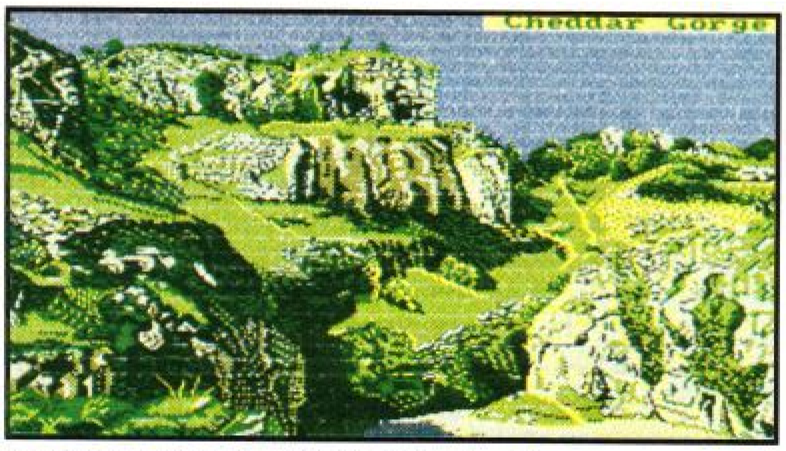
Further experimentation and a good read of the manual (a comprehensive one that is not written in Japlish for once) soon produced the usual 80 cps draft quality, pica, condensed, italics, bold etc. and a whole host of graphics modes.

Whilst timing the draft mode, I noticed what a difference

an 8k buffer made. While the printer is still printing out a draft of a document, the more error prone of us can be correcting the text before the last bit of it is printed out. You could also be preparing the next invoice or getting on with a disc back-up etc.

Having gained confidence on the black ribbon, it was time to tackle the colour one. A simple change of ribbon is all that is necessary for colour printing but it don't 'alf look strange when you just list something out on it.

This is due to the way in which it prints colours. As any kid who has splashed paint around or made technicolour messes



with crayons knows, with three basic colours you can create all the rest; even if the black does look a bit green. The crayon analogy is fairly close to the Okimate method becase the ribbon is actually a plastic strip coated in wax. The head is a thermal one and melts the wax onto the paper. The printer is therefore a bit fussy about what paper it uses and prefers shiny stuff. Photocopier paper works fairly well, while a print out on ordinary microperf is sometimes unreadable in draft mode. The printer really excells itself, however, in producing colour transparencies on acetate film.

The manual clearly illustrates the method by which the different colours are generated by the printer. The manual was not machine specific and used LPRINT to output to the printer. The examples worked fine when all the LPRINTs were replaced with PRINT £8s and the odd semi-colon was left out.

Anyway, back to the ribbons. The point is that it is not fussy about which colour wax it burns on to the paper. The colour ribbon has a strip of yellow, then cyan, then magenta followed by a clear strip which it uses to line itself up. Print the colours on top of one another and you get eight different ones. You can shade these or stipple them with other colours

OKIMATE 20 Colour Printer

The quick brown fox jumps over the lazy dog in draft mode

and carries on in real letter quality.
I like the letter quality so I'll show you a bit more of it in. Note the descenders.

The elite typeface,

and condensed, which fits more in.

Back to pica and into *italics, which people seem to like for higlighting*

With superscript and subscript I can do things like H_2SO_4

It can also EXPAND if you want it

in a similar manner to which Jill Lawsons pictures are done on screen designer to produce many more different hues.

The only real point against the three-colours-in-a-row method is that it is wasteful on ribbons, which cannot be reused as the wax is burned off. If you only print one dot of magenta on a line, you have had to skip a whole strip of yellow and cyan. These ribbon cartridges are currently selling at over £6 each though a price cut is on the cards.

The screen dump software came on a cassette with high resolution dumps on one side and low resolution on the other. The main difference is that the low-res dump uses half as much ribbon as the high-res. This gives you a maximum of sixteen full colour screen dumps per cartridge which works out at forty pence a colour dump. You use it by running the tape and selecting colour/black dumps and the position in memory of the program which defaults to HIMEM. To activate the dump, you press the control key and the full stop on the numeric pad. A good idea but an RSX would have been a good idea too. Also the black and white dumps are not shaded. The pictures are a bit squashed, but not too badly so. Height/width ratios are always a sore point on screen dumps.

Owners of Amstrads with disc systems need not worry about waiting for it to load up each time because the software had built-in routines to copy itself from tape to tape, tape to disc or disc to disc and was not protected in any way. For the technically minded, the dumps take up approximately half K each of which the first hundred bytes or so are a relocator.

The screen shots in this article were mostly done on the high-res dump which took about quarter of an hour. The low-res ones took only a few minutes.

The best way to print a picture from screen designer is to run up the dump you want and type:

```
MEMORY&8000
LOAD"FILENAME.SDS",&8001
CALL&8001:WHILE-1:WEND
```

And when the picture has loaded, press the dot and control keys.

Another feature of this printer is that ALL its features are addressable through a seven bit centronics port. This is a common cause of problems with the Amstrad, especially when it is used with the Epson or one of its compatibles and the like which seem to forget that not all centronics interfaces are eight bit. Some of you may know from bitter experience that many functions of your printers are hidden from them due to the lack of the eighth bit, no such problem on the Okimate.

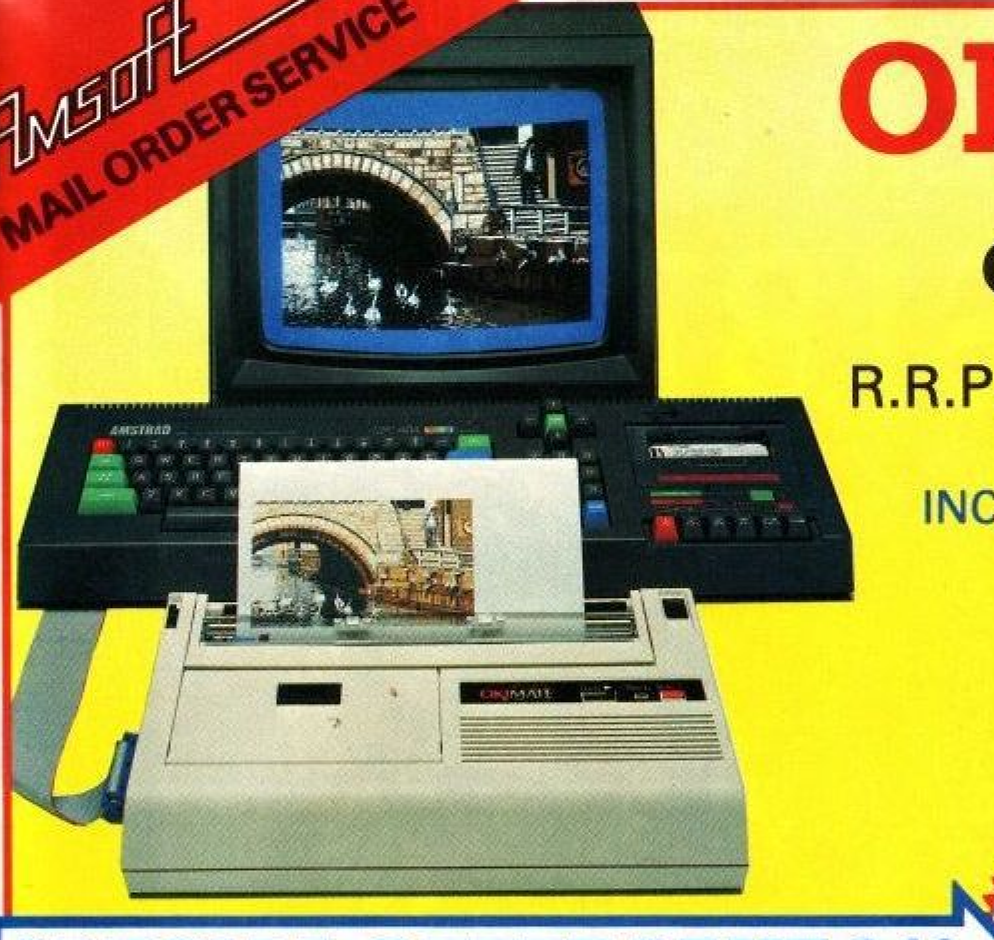
This is not the sort of printer you would use if your main pastime is churning out umpteen page long assembler listings. The letter quality is quite up to daisywheel standards and runs off at a reasonable rate in a number of typestyles making the most effective role of this printer that of producing documentation and correspondence.

The colours are very good and are likely to appeal to the more artistic users such as those creating buisiness charts, printed circuit board layouts and overhead projection films, but could be used for multicoloured invoices, print-it-yourself headers etc. if you can cope with the cost of colour ribbons.

All in all, a specialised and serious product that I enjoyed tinkering with.

ACU

Amsoft MAIL ORDER SERVICE



OKIMATE 20

RIBBON TRANSFER COLOUR PRINTER

R.R.P. only **£299** (inc. VAT and p+p)

INCLUDING : AMSTRAD SOFTWARE
: AMSTRAD PARALLEL INTERFACE LEAD (PL1)
: COLOUR RIBBON
: BLACK RIBBON
: PAPER (30 SHEETS)

SPECIAL OFFER SAVE £40

ONLY £259*

* ONLY WITH THE AMSTRAD USER CLUB

FOR FURTHER INFORMATION CONTACT

X-DATA Ltd
750/751 Deal Avenue, Slough Trading Estate
Slough, Berks, SL1 4SH
Tel: Slough (0753) 31292 Tlx 847728

An order sheet with price details for all consumables is available from Amsoft Mail Order, or X-Data Ltd, and supplied with the printer.

FEATURES

- Available with standard parallel interface (plugs directly in to Amstrad), or with serial RS232 interface.
- Prints colour or black and white
- 80 cps data processing quality
- 40 cps correspondence quality
- Expanded/condensed print, superscript, subscript, italics and underlining
- 80 columns with standard characters
- 132 columns with condensed characters
- Up to 10 national character sets
- High resolution 144 x 144 dpi graphics
- Pica and Elite founts in correspondence quality mode
- 24 element long-life print head with snap-in replacement - no tools needed
- Plain paper, thermal paper or acetate transparencies
- Friction and variable width pin-feed handling (roll paper holder optional)
- "Clean hands" cartridge ribbon
- 64 downline loadable characters
- 8K buffer for simultaneous receive and print
- Ultra compact and very low weight

AMSOFT / OKI ORDER FORM

	QTY
OM2OP (Standard Parallel Interface)	☐
OM2OS (RS232 Serial Interface)	☐

Amsoft Mail Order Price **£299.00 each**
Amstrad User Club Price* **£259.00 each**

Cheque No. ☐

Access Card No. 5 2 2 4 ☐☐☐☐☐☐☐☐☐☐☐☐

Barclaycard No. 4 9 2 9 ☐☐☐☐☐☐☐☐☐ Expiry Date. : :

Orders only accepted for delivery in the U.K
All prices include VAT & postage and packing
Cheques or postal orders payable to AMSOFT

* **Discount price available only to the registered USER CLUB MEMBER when purchased direct from Amsoft, quoting membership number.**

** **This name and address must be the the registered members name and address. If purchased by credit card it must also be the name and address advised to the credit card company.**

(PLEASE ALLOW MAXIMUM OF 28 DAYS FOR DELIVERY)
SUBJECT TO AVAILABILITY AND OUR NORMAL TERMS OF BUSINESS ALL PRICES & SPECIFICATIONS SUBJECT TO ALTERATION WITHOUT NOTICE.

Order Value ☐ Date : : :

*USER CLUB NUMBER. ☐☐☐☐☐☐☐☐☐☐

**NAME Mr/Mrs/Miss
Surname. Initials ☐ ☐
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

**ADDRESS ....
....
....
.... POST CODE ....

DAY PHONE NUMBER ....

(Most Orders will be despatched within 7 days)

POST YOUR ORDER TO:

AMSOFT, Brentwood House, 169 Kings Road, Brentwood, Essex CM14 4EF
Or phone the **ORDER ACTION LINE (0277) 230222**

A CHALLENGING 3D ACTION/STRATEGY PROGRAM FOR YOUR CBM 64

REALM OF IMPOSSIBILITY

U.S. NO.5 HIT! ▶ U.S. NO.5 HIT! ▶ U.S. NO.5 HIT! ▶ U.S. NO.5 HIT!

NOW AVAILABLE FOR SPECTRUM 48K AMSTRAD CPC464 ATARI 600/800XL 130XE INCLUDING FREE ENAMEL METAL BADGE OFFER



OUT NOW ON CASSETTE AND DISK

FEATURES ▶ ▶

▶ Dramatic 3D Graphics & Fast Action ▶ Unique 2-Player Co-operative Mode ▶ 4 Levels of Difficulty ▶ 13 Different Dungeons ▶ 129 Different Rooms ▶ Joystick Control and/or keyboard control – Spectrum & Amstrad versions



INCLUDES Special Discount + Prize Draw Voucher

OBJECTIVE ▼

The evil cleric, Wistrik, has stolen the 7 crowns of the middle Kingdoms – He has hidden them all among his 13 Dungeon strongholds – YOUR TASK – enter the dungeons, find the crowns, and get out alive! ▶ ▶

Watch out for the zombies, snakes, spiders & orbs – get hit too many times and you're dead.

Protect yourself with magic crosses and spells. x x x x

C64 VERSION



Orbs in hot pursuit in the Mines of Minos.

C64 VERSION



Trapped in the Pits of Gehenna.

▶ ▶ ▶ ▶

AVAILABLE FROM ALL GOOD SOFTWARE RETAILERS *If it's not there, please order it – or in case of difficulty send your crossed cheque/P.O. made to* **Ariolasoft U.K. Ltd.** *including your own name and address, to Ariolasoft U.K. Ltd., Suite 105/106, Asphalte House, Palace Street, London SW1E 5HS.*
REALM OF IMPOSSIBILITY ▶ Commodore or Atari Cassette **£9.95** ▶ Disk **£12.95**
▶ Spectrum or Amstrad Cassette **£8.95** – All prices include VAT & p&p. U.K. orders only.

ariolasoft HIGH PERFORMANCE PROGRAMS

3·D Maze

by Nigel Sharp.



So you think Hampton Court is difficult? This maze is on 4 levels and there's no way you can peek through the hedges

In this game you are shown a 3D view of the maze ahead of you through which you must search for the hole which leads to the next level. On the last of the four levels of the maze (each level is on a large grid measuring 35x15 blocks), your ultimate destination is shown as a blue cross on the floor. To help you on your way, a compass and a map are given. The catch is that the map only shows the route you have taken - it starts off just showing your location and the position of the hole leading to the next level. There is a high score table on which to enter your name and a fanfare to look forward to, should you finally complete the maze. Good Luck!

```
100 REM ****************
110 REM *              *
120 REM *  3-D Maze    *
130 REM *              *
140 REM * Written  By *
150 REM * Nigel Sharp *
160 REM *              *
170 REM *  July 1985   *
180 REM *              *
190 REM ****************
200 RANDOMIZE TIME:PRINT CHR$(22)CHR$(0)
    CHR$(23)CHR$(0)
```

```
210 GOSUB 260 'Initialisation
220 GOSUB 490 'Instructions
230 GOSUB 810 'Play Game
240 GOSUB 1160 'Hiscores
250 GOTO 230
260 REM Initialisation
270 DIM ma%(35,15,4)
280 MODE 1:INK 0,0:INK 1,26
290 PAPER 0:PEN 1:LOCATE 13,10
```

```
300 PRINT "Please Wait ..."
310 FOR level=1 TO 4
320 FOR row=1 TO 15
330 READ maze$
340 FOR column=1 TO 35
350 IF MID$(maze$,column,1)=" " THEN ma=
    0 ELSE ma=1
360 ma%(column,row,level)=ma
370 NEXT column,row,level
380 DIM s(15):FOR a=0 TO 15
390 s(a)=0.7↑a*200-1:NEXT
```

```
400 ORIGIN 200,200
410 DIM view(15,3)
420 DIM hi(15),hi$(15)
430 FOR a=1 TO 15
440 hi(a)=500:hi$(a)="Nobody in particul
    ar"
450 NEXT
460 ENT -1,5,-1,1,10,1,1:ENT -2,1,15,1
470 ENV 1,5,-1,1,100,0,100:ENV 2,15,-1,1
480 RETURN
490 REM Instructions
500 MODE 1:INK 0,0:INK 1,26
```

```
510 INK 2,12:INK 3,14:BORDER 11
520 PAPER 0:PEN 1:LOCATE 17,2
530 PRINT "3-D Maze":LOCATE 16,3
540 PRINT "==========":LOCATE 10,4
550 PEN 2:PRINT "Written By Nigel Sharp"
560 PEN 3:PRINT
570 PRINT "   The object of this laberyn
    th game is"
580 PRINT " to work your way down throug
    h the four"
590 PRINT " levels  of  the  maze,  to
    the ground"
600 PRINT " floor, where you must find t
    he  target"
610 PRINT " location, marked with  a blu
    e cross on"
620 PRINT " the floor. On each level  th
    ere  is  a"
```

```
630 PRINT " hole which leads to the next
     level."
640 PRINT "  There are several things to
     help you."
650 PRINT " These are to the right of  t
    he 3b view"
660 PRINT " of the maze shown on the lef
    t. The one"
```

Amsoft MAIL ORDER SERVICE

SHINECREST QUALITY COMPUTER DESK

£69.95 (inc. VAT and p+p)

OVER £10.00 DISCOUNT TO AMSTRAD USER CLUB MEMBERS



Computer Desk Model No. 600

Features

- All shelves supported by two strong painted metal rails providing extra product strength.
- Space available above and below courtesy panel for interconnecting leads.
- Lower shelf providing room for disc drives and programe storage.
- Strong metal frame finished with attractive metallic brown.
- Delivered in easy to assemble "Flat Pack" form.
- Substantial courtesy panel providing total stability.
- Twin wheel castors allowing easy mobility.
- Available in Teak woodgrain finish.

Distance between top and middle shelf	146mm ($5^3/_4$")
Distance between middle and bottom shelf	216mm ($8^1/_2$")
Depth of plinth (top) shelf	292mm ($11^1/_2$")
Depth of bottom shelf	320mm ($12^1/_2$")
Dimensions:	
Width	933mm ($36^3/_4$")
Depth	610mm (24")
Height	889mm (35")

For further information contact:
Shinecrest Products Ltd.
41 Brook Road,
Rayleigh Weir Industrial Estate,
Rayleigh, Essex.
Telephone Rayleigh (0268) 777444.

Shine M600

AMSOFT/SHINECREST ORDER FORM

Shinecrest: Computer Desk Model No. 600		
Amsoft Mail Order Price	£69.95	QTY
Amstrad User Club Price *	£59.46	

Order Value

Date : : :

Cheque No.

*USER CLUB NUMBER.

Access Card No.

5 2 2 4

**NAME Mr/Mrs/Miss

Surname. Initials

Barclaycard No.

4 9 2 9

Expiry Date. : :

**ADDRESS ....

.... POST CODE ....

DAY PHONE NUMBER ....

Orders only accepted for delivery in the U.K
All prices include VAT & postage and packing
Cheques or postal orders payable to AMSOFT

* Discount price available only to the registered USER CLUB MEMBER when purchased direct from Amsoft, quoting membership number.

** This name and address must be the the registered members name and address. If purchased by credit card it must also be the name and address advised to the credit card company.

(PLEASE ALLOW MAXIMUM OF 28 DAYS FOR DELIVERY)
(Most Orders will be despatched within 7 days)
SUBJECT TO AVAILABILITY AND OUR NORMAL TERMS OF BUSINESS ALL PRICES & SPECIFICATIONS SUBJECT TO ALTERATION WITHOUT NOTICE.

POST YOUR ORDER TO:

AMSOFT, Brentwood House, 169 Kings Road, Brentwood, Essex CM14 4EF
Or phone the **ORDER ACTION LINE (0277) 230222**

```
670 PRINT " which should prove most useful is  the"
680 PRINT " map at the bottom, which is built  up"
690 PRINT " as you explore the maze. The hole ( or"
700 PRINT " target, on the last level) is shown as"
710 PRINT " a black dot, and your current position"
720 PRINT " is shown flashing.Use the left & right"
730 PRINT " cursor keys to turn, and the copy  key"
740 PRINT " to move forwards."
750 LOCATE 13,25:PAPER 1:PEN 2
760 LOCATE 13,25:PAPER 1:PEN 2
770 PRINT "PRESS ANY KEY";
780 WHILE INKEY$<>"":WEND
790 IF INKEY$="" THEN 790
800 RETURN
810 REM Play Game
820 moves=0:lev=0
830 REM new level
840 dir=INT(RND(1)*4)+1:lev=lev+1:mx=520:my=48:ORIGIN 520,48
850 FOR a=-32 TO 32 STEP 2:PLOT -72,a,2:DRAWR 144,0,2:NEXT
860 GOSUB 2100
870 x=INT(RND(1)*33)+2
880 y=INT(RND(1)*13)+2
890 otx=x:oty=y
900 IF lev=1 THEN otx=1:oty=1
910 IF ma%(x,y,lev)=1 THEN 870
920 tx=INT(RND(1)*33)+2
930 ty=INT(RND(1)*13)+2
940 IF ma%(tx,ty,lev)=1 THEN 920
950 ORIGIN 520,48:PLOT (tx-x)*2,(ty-y)*2,3
960 GOSUB 2890
970 WHILE INKEY$<>"":WEND
980 PLOT mx,my,2:FOR a=1 TO 25:NEXT:PLOT mx,my,0:a$=INKEY$:FOR a=1 TO 15:NEXT:IF a$="" THEN 980
990 ke=ASC(a$)
1000 IF ke<>242 AND ke<>243 AND ke<>224 THEN 980
1010 IF ke=224 AND view(1,2)=1 THEN 980
1020 SOUND 129,50,0,15,2,2
1030 IF ke=242 THEN dir=dir-1
1040 IF ke=243 THEN dir=dir+1
1050 IF dir=0 THEN dir=4
1060 IF dir=5 THEN dir=1
1070 IF ke<>224 THEN 960
1080 moves=moves+1
1090 IF dir=1 THEN y=y+1:my=my+2
1100 IF dir=2 THEN x=x+1:mx=mx+2
1110 IF dir=3 THEN y=y-1:my=my-2
1120 IF dir=4 THEN x=x-1:mx=mx-2
1130 IF x<>tx OR y<>ty THEN 960
1140 GOSUB 3240:IF lev<4 THEN 830
1150 RETURN
1160 REM Hiscores
1170 IF hi(15)<sc THEN wfc=1:GOTO 1230
1180 hi(15)=moves:hi$(15)="":place=15
1190 FOR a=15 TO 2 STEP -1
1200 IF hi(a-1)>hi(a) THEN hi=hi(a):hi$=hi$(a):hi(a)=hi(a-1):hi$(a)=hi$(a-1):hi(a-1)=hi:hi$(a-1)=hi$:pl=a-1
1210 NEXT:wfc=0
1220 GOSUB 1230:LOCATE 10,pl+8:PAPER 2:PEN 0:INPUT hi$(pl):wfc=1
1230 PAPER 2:MODE 1:CLS
1240 LOCATE 15,2:PEN 3
1250 PRINT "************"
1260 LOCATE 15,3
1270 PRINT "* 3-D Maze *"
1280 LOCATE 15,4
1290 PRINT "************"
1300 LOCATE 17,6:PEN 0
1310 PRINT "HISCORES"
1320 LOCATE 16,7
1330 PRINT "=========="
1340 PEN 3:LOCATE 1,9
1350 FOR a=1 TO 15
1360 IF a<10 THEN PRINT " ";
1370 PRINT a;CHR$(8);") ";hi(a);:IF hi(a)<100 THEN PRINT " ";
1380 PRINT hi$(a)
1390 NEXT a
1400 LOCATE 13,25:PAPER 0:PEN 1
1410 PRINT "Press Any Key";
1420 IF wfc=0 THEN LOCATE 13,25:PRINT " Enter Name  ";
1430 WHILE INKEY$<>"":WEND
1440 IF INKEY$="" AND wfc=1 THEN 1440
1450 RETURN
1460 REM Level 1
1470 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1480 DATA X                    X  X         X
1490 DATA X XXX X X XXXX XXX X X XX X X X X X
1500 DATA X X X X X X    X   X X -X X X X X X
1510 DATA X X X X X X XX XXX X XX X XXX X X X
1520 DATA X X X X X X  X X   X    X X X X   X
1530 DATA X X XXX X XXXX XXX XXXX X X X X X X
1540 DATA X                                 X
1550 DATA X X X X X XXXX XXX X X XXX X X XXXX
1560 DATA X XXXXX X X  X       X X   X XXX  X
1570 DATA X X X X X XX X X X X   X X X     XX
1580 DATA X       X    X     X X   X X X X  X
1590 DATA X XXXXX XXXXXX X XXX X XXX X X XX X
1600 DATA X                                 X
1610 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1620 REM Level 2
1630 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1640 DATA X   XX   X       X       X   XX   X
1650 DATA X X   X XX XXX X X X XXX XX X   X X
1660 DATA X   X   X    X X   X X    X   X   X
1670 DATA X X   X   XX X XX XX X XX   X   X X
1680 DATA X   X   X   XX       XX   X   X   X
1690 DATA X X   X   X   XX X XX   X   X   X X
1700 DATA X   X   X   X    X    X   X   X   X
1710 DATA X X   X   X   XX X XX   X   X   X X
1720 DATA X   X   X   XX       XX   X   X   X
1730 DATA X X   X   XX X XX XX X XX   X   X X
1740 DATA X   X   X    X X   X X    X   X   X
1750 DATA X X   X XX XXX X X X XXX XX X   X X
1760 DATA X   XX   X       X       X   XX   X
1770 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1780 REM Level 3
1790 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1800 DATA X     X   X    X X      X        XX
1810 DATA X XXX X XXX X X   X XXX X XXXX X  X
1820 DATA X X   X     X X X X     X X    XX X
1830 DATA X   X X X X   X   X XXX   X XX X  X
1840 DATA X XXX   X X XX  X   X X X      X XX
1850 DATA X   X X X X  X X  X   X  XX XX    X
1860 DATA X X   XX  XX  X  XX X  X     X XX X
1870 DATA X XXX X  XX X   XX   X  XX X X   XX
1880 DATA X     X X    X X   X XX    X XXX  X
1890 DATA X XXXX  XX X X X X     X X X   X XX
1900 DATA X      X   X X X   X X X   X X    X
1910 DATA X XXXX X XXX X X X     X X X XX X X
1920 DATA X                  X X   X X    X X
1930 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1940 REM Level 4
1950 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1960 DATA X    X   X   X X   X   X  X       X
1970 DATA X XX   X X X     X   X  X X X XXX X
1980 DATA X    X   X XX XXXXX XXX     X X X X
1990 DATA X XXX X X   X X   X    X X XX X   X
2000 DATA X   X     X X X X XXXX  X   X X XXX
2010 DATA XXX  XXXXXX X   X X   X X X   X   X
2020 DATA X  X        XXXX    X     X XX  X X
```

```
2030 DATA X X  XXXXXX      XXX  X X
      X  X
2040 DATA X   X X     X XX     X  XXXXXX
      X XX
2050 DATA X XXX X XXXXX   XXXXX  X X  XX
      X  X
2060 DATA X     X     XXX       X    X
      XX X
2070 DATA X XXXXXXXXX X XX XXXXX  XX   X
      X  X
2080 DATA X                      X   X X
        XX
2090 DATA XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
     XXXXX
2100 REM Set up screen
2110 REM
2120 MODE 1:BORDER 2
2130 INK 0,0:INK 1,14:INK 2,12:INK 3,3
2140 WINDOW #1,26,40,1,25:WINDOW #2,1,25
     ,1,25
2150 PAPER #1,3:CLS #1
2160 PEN #1,1:LOCATE #1,3,2:PRINT #1,"Mo
     ves Taken"
2170 LOCATE #1,4,3:PRINT #1,"So  Far:"
2180 LOCATE #1,4,7:PRINT #1,"Moves  To"
2190 LOCATE #1,5,8:PRINT #1,"Target:"
```

```
2200 LOCATE #1,6,12:PRINT #1,"Level"
2210 LOCATE #1,8,16:PRINT #1,"N"
2220 LOCATE #1,10,18:PRINT #1,"E"
2230 LOCATE #1,8,20:PRINT #1,"S"
2240 LOCATE #1,6,18:PRINT #1,"W"
2250 PAPER #1,2:FOR a=21 TO 24
2260 LOCATE #1,4,a:PRINT #1,SPACE$(9)
2270 NEXT
2280 RETURN
2290 REM Set up view info (North)
2300 en=0
2310 FOR a=0 TO 15
2320 IF en=1 THEN 2420
2330 view(a,1)=ma%(x-1,y+a,lev)
2340 IF tx<>x OR ty<>y+a THEN 2370
2350 IF lev=4 THEN view(a,2)=2 ELSE view
     (a,2)=3
2360 GOTO 2380
2370 view(a,2)=ma%(x,y+a,lev)
2380 IF x=otx AND oty=y+a AND ma%(otx,ot
     y,lev)<>1 THEN view(a,2)=4
2390 view(a,3)=ma%(x+1,y+a,lev)
2400 en=view(a,2)
```

```
2410 NEXT
2420 FOR a=1 TO 2:NEXT
2430 RETURN
2440 REM Set up view info (East)
2450 en=0
2460 FOR a=0 TO 15
2470 IF en=1 THEN 2570
2480 view(a,1)=ma%(x+a,y+1,lev)
2490 IF ty<>y OR tx<>x+a THEN 2520
2500 IF lev=4 THEN view(a,2)=2 ELSE view
     (a,2)=3
2510 GOTO 2530
2520 view(a,2)=ma%(x+a,y,lev)
2530 IF y=oty AND otx=x+a AND ma%(otx,ot
     y,lev)<>1 THEN view(a,2)=4
2540 view(a,3)=ma%(x+a,y-1,lev)
2550 en=view(a,2)
2560 NEXT
2570 FOR a=1 TO 2:NEXT
2580 RETURN
2590 REM Set up view info (South)
```

```
2600 en=0
2610 FOR a=0 TO 15
2620 IF en=1 THEN 2720
2630 view(a,1)=ma%(x+1,y-a,lev)
2640 IF x<>tx OR ty<>y-a THEN 2670
2650 IF lev=4 THEN view(a,2)=2 ELSE view
     (a,2)=3
2660 GOTO 2680
2670 view(a,2)=ma%(x,y-a,lev)
2680 IF x=otx AND oty=y-a AND ma%(otx,ot
     y,lev)<>1 THEN view(a,2)=4
2690 view(a,3)=ma%(x-1,y-a,lev)
2700 en=view(a,2)
2710 NEXT
2720 FOR a=1 TO 2:NEXT
2730 RETURN
2740 REM Set up view info (West)
```

```
2750 en=0
2760 FOR a=0 TO 15
2770 IF en=1 THEN 2870
2780 view(a,1)=ma%(x-a,y-1,lev)
2790 IF y<>ty OR tx<>x-a THEN 2820
2800 IF lev=4 THEN view(a,2)=2 ELSE view
     (a,2)=3
2810 GOTO 2830
2820 view(a,2)=ma%(x-a,y,lev)
2830 IF y=oty AND otx=x-a AND ma%(otx,ot
     y,lev)<>1 THEN view(a,2)=4
2840 view(a,3)=ma%(x-a,y+1,lev)
2850 en=view(a,2)
2860 NEXT
2870 FOR a=1 TO 2:NEXT
2880 RETURN
2890 REM Draw 3-D view of maze
```

```
2900 ON dir GOSUB 2290,2440,2590,2740
2910 CLS #2:ORIGIN 200,200:en=0
2920 FOR d=0 TO 10
2930 IF view(d,2)<>1 THEN 2980
2940 PLOT -s(d),s(d),2:DRAW s(d),s(d),2:
     PLOT -s(d),-s(d),2:DRAW s(d),-s(d),
     2
2950 IF view(d-1,1)=1 THEN PLOT -s(d),s(
     d),2:DRAW -s(d),-s(d),2
2960 IF view(d-1,3)=1 THEN PLOT s(d),s(d
     ),2:DRAW s(d),-s(d),2
2970 en=1
2980 IF en=1 THEN 3080
2990 IF view(d,1)=1 THEN PLOT -s(d),s(d)
     ,2:DRAW -s(d+1),s(d+1),2:PLOT -s(d)
     ,-s(d),2:DRAW -s(d+1),-s(d+1),2 ELS
     E PLOT -s(d),s(d+1),2:DRAW -s(d+1),
     s(d+1),2:PLOT -s(d),-s(d+1),2:DRAW
     -s(d+1),-s(d+1),2
```

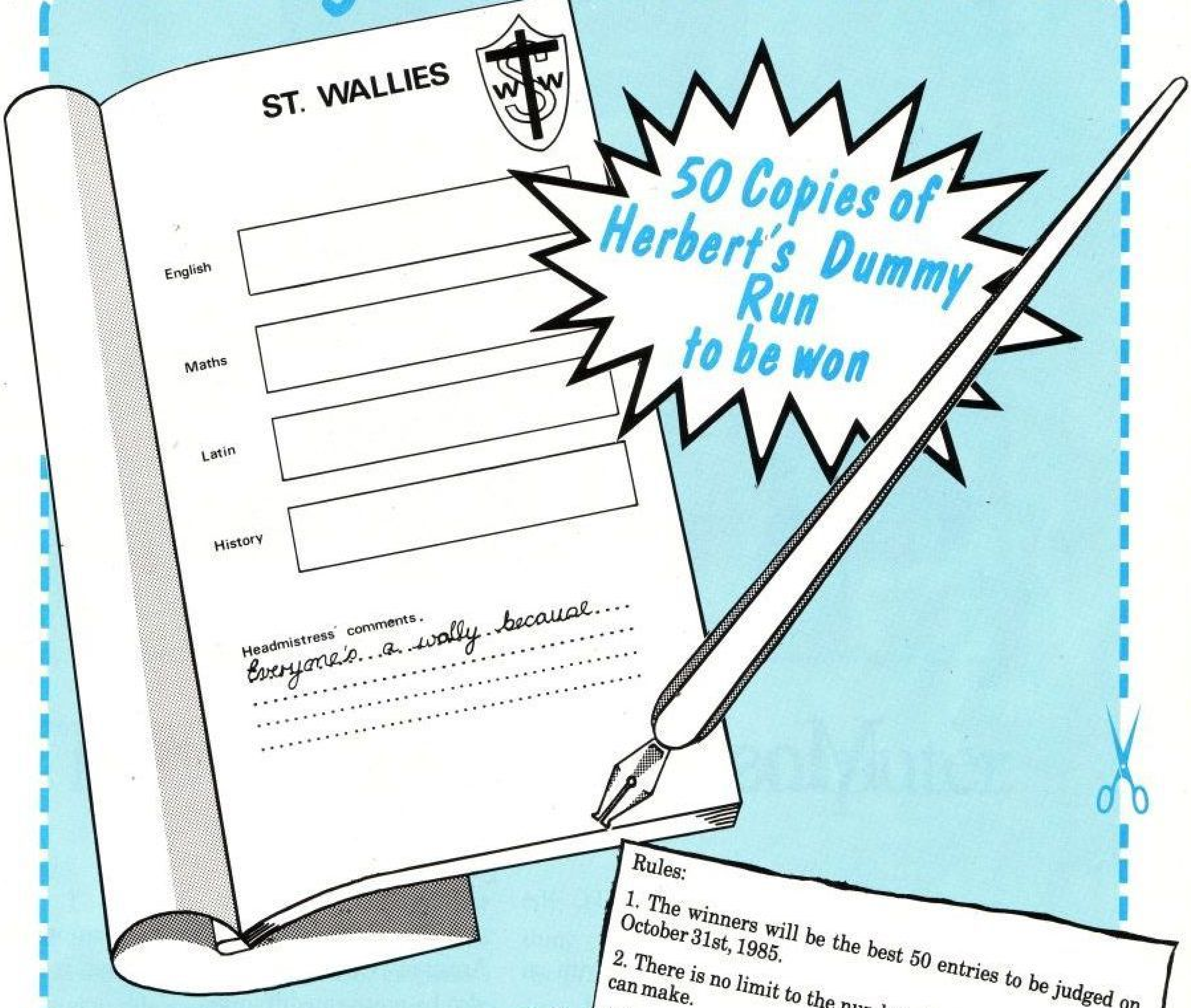
```
3000 IF view(d,3)=1 THEN PLOT s(d),s(d),
     2:DRAW s(d+1),s(d+1),2:PLOT s(d),-s
     (d),2:DRAW s(d+1),-s(d+1),2 ELSE PL
     OT s(d),s(d+1),2:DRAW s(d+1),s(d+1)
     ,2:PLOT s(d),-s(d+1),2:DRAW s(d+1),
     -s(d+1),2
3010 IF (view(d,1)<>view(d+1,1)) AND vie
     w(d+1,2)<>1 THEN PLOT -s(d+1),s(d+1
     ),2:DRAW -s(d+1),-s(d+1),2
3020 IF (view(d,3)<>view(d+1,3)) AND vie
     w(d+1,2)<>1 THEN PLOT s(d+1),s(d+1)
     ,2:DRAW s(d+1),-s(d+1),2
3030 IF view(d,2)=2 THEN PLOT -s(d),-s(d
     ),1:DRAW s(d+1),-s(d+1),1:PLOT s(d)
     ,-s(d),1:DRAW -s(d+1),-s(d+1),1
```

```
3040 IF view(d,2)=3 THEN PLOT -s(d+1),-s
     (d+1),2:DRAW -s(d+1),-s(d),2:PLOT s
     (d+1),-s(d+1),2:DRAW s(d+1),-s(d),2
     :PLOT -s(d),-s(d),2:DRAW s(d),-s(d)
     ,2:DRAW s(d+1),-s(d+1),2:DRAW -s(d+
     1),-s(d+1),2:DRAW -s(d),-s(d),2
3050 IF view(d,2)=4 THEN PLOT -s(d+1),s(
     d+1),2:DRAW -s(d+1),s(d),2:PLOT s(d
     +1),s(d+1),2:DRAW s(d+1),s(d),2:PLO
     T -s(d),s(d),2:DRAW s(d),s(d),2:DRA
     W s(d+1),s(d+1),2:DRAW -s(d+1),s(d+
     1),2:DRAW -s(d),s(d),2
3060 en=view(d,2)
3070 NEXT
3080 FOR a=1 TO 2:NEXT
3090 PEN #1,2:PAPER #1,3:LOCATE #1,6,5
3100 PRINT #1,moves:LOCATE #1,6,10
3110 dtt=INT(SQR(ABS(tx-x)↑2+ABS(ty-y)↑2
     ))
3120 PRINT #1,dtt:LOCATE #1,7,14
3130 PRINT #1,lev
3140 LOCATE #1,8,17:PRINT #1," "
3150 LOCATE #1,9,18:PRINT #1," "
3160 LOCATE #1,8,19:PRINT #1," "
3170 LOCATE #1,7,18:PRINT #1," "
3180 IF DIr=1 THEN LOCATE #1,8,17:PRINT
     #1,CHR$(240)
3190 IF DIr=2 THEN LOCATE #1,9,18:PRINT
     #1,CHR$(243)
3200 IF dir=3 THEN LOCATE #1,8,19:PRINT
     #1,CHR$(241)
3210 IF dir=4 THEN LOCATE #1,7,18:PRINT
     #1,CHR$(242)
```

```
3220 ORIGIN 0,0:PLOT mx,my,0
3230 RETURN
3240 REM Sound for reaching next level
3250 GOSUB 2890:IF lev=4 THEN 3310
3260 SOUND 129,50,200,15,0,1
3270 FOR a=31 TO 1 STEP -1
3280 SOUND 1,0,2,a/4,0,0,a
3290 NEXT
3300 RETURN
3310 REM Music for when final target   r
     eached
3320 RESTORE 3370
3330 FOR a=1 TO 12
3340 READ no,le
3350 SOUND 1,no,le*10,15,1
3360 NEXT
3370 DATA 119,2,119,1,119,1,119,2
3380 DATA 95,2,95,1,95,1,95,2
3390 DATA 80,2,80,2,80,2
3400 DATA 60,6
3410 RETURN
```



Calling all Wallies!



Micro Gen have 50 copies of their very latest game 'Herbert's Dummy Run' to give away. Don't be the last to get a copy and send off your entry today.

All you have to do in order to win a copy is write Wally's school report, for this year, in the blank report book shown below, and then you can tell us, in the headmistress' remarks, why everyone's a Wally.

Rules:

1. The winners will be the best 50 entries to be judged on October 31st, 1985.
2. There is no limit to the number of entries any individual can make.
3. Entries should be sent to:
Amstrad Computer User Magazine
Wally Competition
169 Kings Road
Brentwood
Essex
CM14 4EF
4. No correspondence can be entered into regarding the competition. No entries can be returned.
5. The judges' decision is final. No employees of Amstrad, Amsoft, Amstrad User or their relatives may enter.
returned.



Most home computers.

As you can see, the Amstrad CPC 464 is no ordinary home computer.

For a start, it comes complete with an integral cassette datacorder.

And in addition, you get the choice of either a superb quality green screen or a full colour monitor.

With £100 of free software to get you going all you have to do is plug in and start computing.

The 64k of RAM means you'll have plenty of memory to play with. And there are over 200 Amsoft games, that you can play, many exclusive to Amstrad.





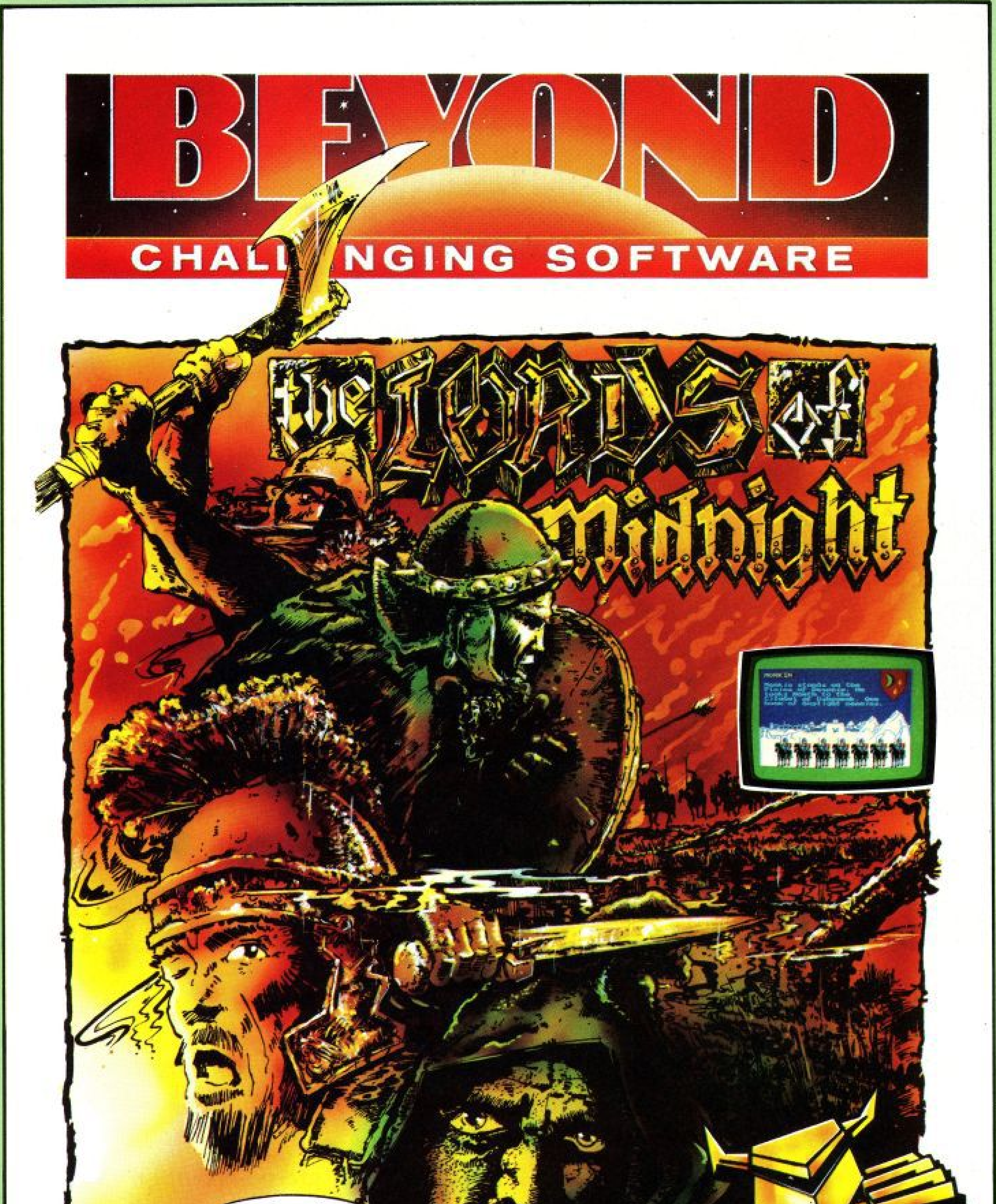
But games are only half the fun on the Amstrad CPC 464. In fact using it can also be quite an education.

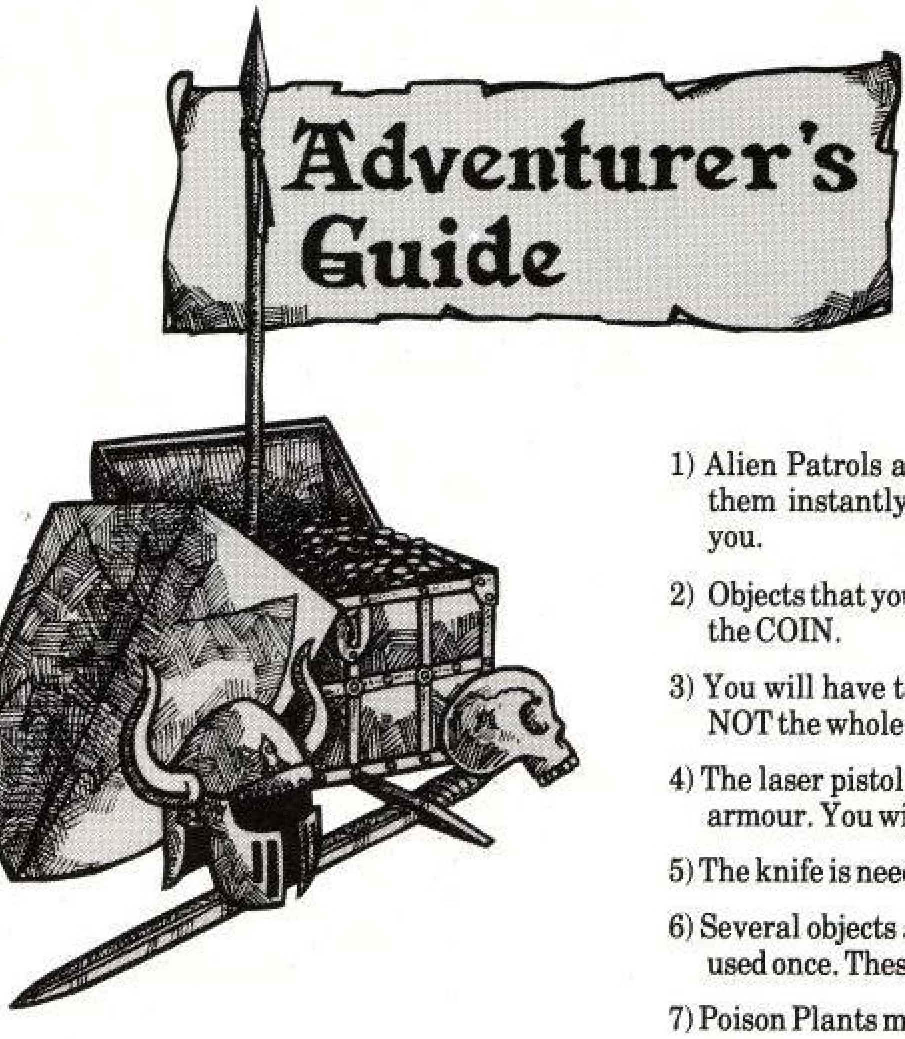
The kids can learn spelling and arithmetic with software like Wordhang and Happy Numbers.

Whilst adults will love the way it helps around the house with budgetting and accounts

Put the 464 to work and it will take care of a number of business-like functions such as word-processing and spreadsheet.

AVAILABLE AT BOOTS · BRIDGERS · CLYDESDALE · COMET · CURRYS · DIXONS · GRANADA · GREENS · LASKYS · JOHN LEWIS · RUMBELOWS


BEYOND
CHALLENGING SOFTWARE
the LORDS of midnight
AMSTRAD
By Mike Singleton
FROM AMSOFT
Tape £8 .95 Disc £12.95



Welcome to the Adventure Column. From now on, I shall be handling adventures that many people tend to get 'stuck' on. There will also be reviews of a few less known adventures, news of forthcoming adventures, hints & tips and letters answered.

Many people write in to magazines saying that they are hopelessly stuck and would like a little advice. Get writing, here's your chance. Don't worry if you're stuck on the very easiest of adventures, because it's most likely that there are thousands in the same predicament. If you do decide to write in, I'm afraid I won't be able to reply to you personally but I will try to answer you in the magazine. Don't be disheartened if you can't see your letter or any mention of it; I will get round to it.

To start-off with, I have received a map of 'Gems of Stradus'. You'll probably find that, every so often, maps will be printed just to help you. Here's one now. I'm afraid I cannot thank the sender, because I don't know his name or address. This is a common mistake - so remember this when you write in.

He has also sent a brief 'helpsheet', but I think the map is enough for now. This should help the family in Oregon Way in Chaddesden who requested to see the map.

Mark Lee Winter of Dunstable said in his letter that 'Forest at World's End' has the best graphics for an adventure. I would like to point out that, although they may be good, they are few and far between. Level 9, however, has just brought out 'Emerald Isle'. It has 200 graphically depicted locations. Impressive? Certainly. I've played it and it's very worthwhile for any adventurer.

Here's the point where I give some useful advice myself on Interceptor's 'Message from Andromeda'. Follow these and you can't go wrong....

1) Alien Patrols appear quite frequently. You MUST shoot them instantly, or they will simply follow you and kill you.

2) Objects that you DON'T need are the METAL BAR and the COIN.

3) You will have to use the explosives to blow-up a wall and NOT the whole base. You also need a detonator.

4) The laser pistol will not penetrate the commander's space armour. You will need the space axe.

5) The knife is needed more than once.

6) Several objects are, however, useless after they have been used once. These are the ROD and DETONATOR.

7) Poison Plants must be handled with gloves.

8) The password to the self-destructor can be found inscribed on a wall somewhere.

Enough to be getting on with?

Let's have a closer look at a very worthwhile utility-the QUILL. It was reviewed in the May '85 edition but now I'll describe it in greater depth for the more serious adventurer.

The supplied manual is simply excellent and from this you'll soon be creating your very own Classic Adventure. After loading, you are faced with a menu with a facility to switch to yet another. At the top of the list is 'Vocabulary'. Type 'A' to view it. You can then enter your work, add synonyms, delete it and then print the whole lot out onto a printer, if desired. After adding your vocab, you then move down the list in the given order. Describe each of your locations, show directions, and add 'messages'. There are 32 user-accessible flags that have various jobs. You can then go further to change colours, system messages (things like 'HUH?' and 'I CAN'T UNDERSTAND THAT') and even the amount of objects you can carry at once. After all this, you look-up the 'EVENT TABLE' that does the actual interpreting of the player's commands. This section is the most laborious since you have to type in every possible command necessary to your adventure. As yet there isn't a complimentary program to add graphics to your 'QUILL' adventures, but Gilsoft hope to bring one out eventually.

And please remember that this section will only 'survive' if adventurers help fellow adventurers who are stuck.

I have found some information on Fantasia Diamond. The idea of the conductor and orchestra is to get them to open the musical door, as most adventurers know. You MUST however arrange them in some order unknown to me. What I heard was that you have to put them in the right configuration to open the door. It sounds like you'll have to keep experimenting with the order.

Since this section deals with ANY type of adventure, I think that I should print the necessary POKE for infinite lives on Roland in Time, sent in by Allan Gibson. Follow these instructions:-

1) Type in MEMORY 4999 : LOAD "ROINTIME", 5000

2) Put the tape in the machine and follow screen instructions.

3) Type POKE 5850, 167 and then ENTER after the code has loaded.

4) Type CALL 5000 and you can now play for a little longer! If you find yourself wanting to start again, you'll have to press COPY. As soon as a Poke comes along for Roland in Space, be sure it'll be printed the moment I know about it.

Just remember

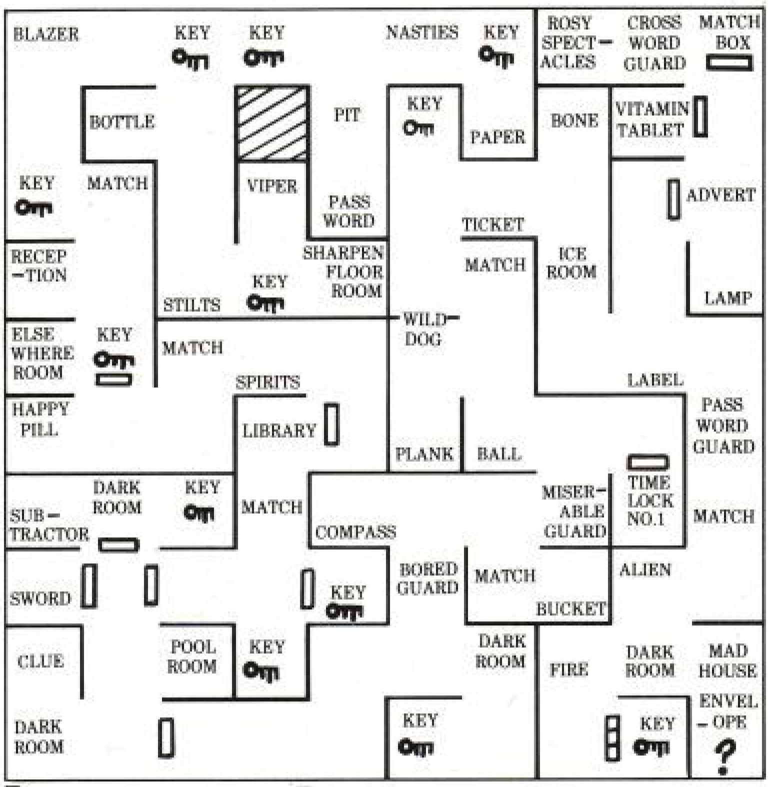
If you are

1) Stuck on an adventure; and

2) Would like to know details of present/forthcoming adventures;

3) Would like a commercial program reviewed;

4) Have any ideas for improving this section;



= LOCKED DOOR   = TIME LOCK DOOR (3 3 FIGURE NUMBERS)

Then write to:-
ADVENTURE COLUMN
AMSTRAD COMPUTER USER
169 King's Road,
Brentwood,
Essex CM14 4EF

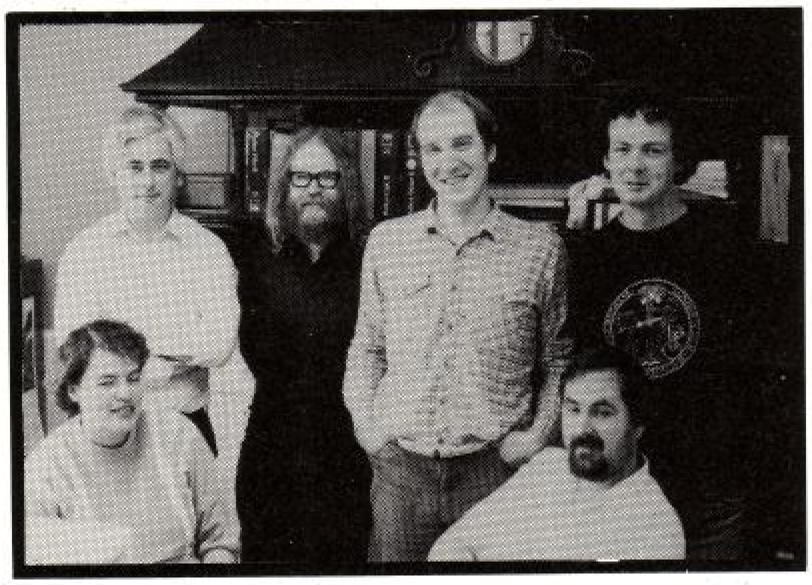
ACU

Unsung Heros (2) The Back Room Boys

Jeremy Vine

A first floor office overlooking an abattoir in Dorking, Surrey, is not a place you'd expect to find one of the leading software houses in Britain. Even less likely is the small number of people who are responsible for creating the firmware of the Amstrad range of computers. The company is, of course, Locomotive Software.

Working from extremely modest surroundings, Richard Clayton, one of two founder directors of Locomotive, and his staff keep up a record of producing very high quality software. And there is no way that Locomotive's contribution to the Amstrad micro can be understated. Richard Clayton and his colleagues are the power behind the throne. They are the back room boys and that's the way they like it.



Tony Bush Richard Clayton Bruce Godden Paul Ogerell
Jean Gilmour Howard Fisher

Richard Clayton is, in appearance, the stereotyped image of what programmers are expected to look like. With long hair and beard he looks more like a terminal-junkie, whose idea of fun is to hack his way through a 1000 line listing, than the joint-director of a successful software company. But physical impressions are misleading and a few hours in his company leaves the listener with lasting admiration.

Supporting Richard Clayton is Howard Fisher, an import from Acorn Computers Ltd., manufacturers of the BBC micro, where he was leader of the business systems group. With a total of eight employees including Richard and his fellow director, Chris Hall, Locomotive is a tightly knit group of people who have more in common than just this one company. Their association with each other extends back over many years and the history behind the company is as interesting as the software they write.

Richard and Howard first met each other in October 1971 at Churchill College, Cambridge where Richard was studing Maths and Howard, Computer Science. Richard seems quite proud of the fact that he was kicked out of Cambridge but that early meeting with Howard and some other members of the team was to prove to be the foundation of a company that took shape 12 years later.

Another commonality which binds the Locomotive team together is that they all worked (with one exception) at one time or other for another company called Data Recall, one of the first companies to produce a word processor. Richard Clayton worked for Data Recall for about 8 years during which time he also studied at Manchester University for his Computer Science degree which he this time completed. Not only completed but got the top 1st in the college. It was during this time that Richard Clayton met Chris Hall (later his fellow director), whom he introduced to Data Recall and subsequently Chris Hall also went to work for Data Recall. Although they did not know it then, the Locomotive team was being formed.

A takeover at Data Recall led Richard and Chris into doing what they had considered for a long time setting up up their own company. With the demise of Data Recall, Howard Fisher left the company to join Acorn Computers.

Acorn at that time were looking for a BASIC interpreter to be bundled with their Z80 C/M package. It comes as no surprise to learn that Richard and Chris gained the contract to produce the BASIC. That contract gave them the financial base on which to set up a company. Locomotive was thus born.

Locomotive's first major product was the "Mallard" BASIC interpreter which was sold to Acorn for use with their Z80 CP/M system. Why "Mallard"? Well, the world speed record for a steam locomotive (geddit?) is held by LNER 4-6-2 No. 4468, which hauled seven coaches weighing 240 tons over a measured quarter mile at 126 mph on the 3rd July 1938. The name of that engine? Yes, you guessed it - Mallard. Now who says Amstrad User isn't educational?

At that stage, Richard Clayton never envisaged what the future held for them. Says Richard, "If someone had told us at that stage that we would be writing the software for a major computer, we would have laughed at them". But write it they did and their continued relationship with Amstrad is due to the success of their software in the Amstrad series of machines.

Locomotive's involvement with the CPC 464 project was from quite an early stage and it was their influence that made the computer what it is today. However, as the machine approached finalisation there was still a problem. What was that problem? "Well, we said it (the machine) was wonderful, the rest of the team said it was wonderful, in fact everyone thought it was great." That's a problem? Continues Richard, "Amstrad, at that stage, knew little about the home

computer market. Everyone involved was in agreement but this was slightly worrying as these views could have been slightly biased So Amstrad decided to have an outside expert look at the machine."

The outside expert Amstrad went to was none other than Guy Kewney, the PCW journalist. "So just after Christmas (1983), I carted an early version of the machine to Mr. Kewney and spent the afternoon showing it to him" says Richard. "He was impressed with it and wrote a report about what he liked and a few things he didn't like about the machine. After that, Amstrad felt they really had a winner." And now, of course, we all know that.



Chris Hall

One thing that impressed me when the 464 was launched was the immediate availability of a detailed firmware manual which, for any home micro system, was virtually unheard of. Had this been intended all along? Richard Clayton smiles and answers the question by telling me how they write their program code. "We write programs in a very strange style, very strange indeed. We write a lot of comments with the code", says Richard. "In particular, we write a lot of comments at the front of each routine, saying what it's going to do, the registers it uses, which ones are corrupted and so on."

The upshot of all this is that every bit of code within the firmware is documented. Therefore with all these large headers at the front of each routine, Locomotive merely had to edit their comments. Well, almost It actually took Bruce Godden, who was responsible for much of the firmware, three months full-time to write the firmware manual as there was much other introductory detail to be documented but the availability of comments on each routine made the job far quicker than it would otherwise have been.

The need for detailed documentation was also inspired by another influence. The marketing policies of other computer manufacturers had shown that the big gap in the launch of a micro was the availability of software. It's probably true to say that the ultimate success of a machine, regardless of its hardware, is the software support. Locomotive and Amstrad were keenly aware that a large range of software must be available at the launch of the machine.

In order to achieve that amount of independent support, information had to be available to software houses who had prototype machines. That and the need to supply detailed information to the public made the firmware manual the ultimate guide to the insides of the CPC 464. This open policy on information was without a doubt the right decision and was recognised by those acquainted with the micro industry as an important foundation of the Amstrad system.

Amstrad's dealings with Locomotive have always impressed Richard Clayton. When a decision is taken, it's firm and Amstrad is a company that believes in deadlines. At the very beginning of the project, Amstrad set a date for months ahead, for the ROMing of the operating system. "Those were the rules", says Richard. "From early September onwards we used to have a whiteboard and each week we changed the number of weeks to go, so we knew where we were. We discovered, however, that Amstrad had meant the end of a certain week when we thought it was the beginning of the week after, this resulted in the loss of a weekend in which to finish the work. "Not even that or anything else prevented Locomotive from finishing on time. Says Richard, "Lo and behold, it went on that day and it was ROMmed."

To listen to Richard Clayton's description of the development of the BASIC and firmware makes it all sound too easy. Surely everything wasn't quite as smooth? Richard insists that it was. Writing something as big as the 464 firmware may have been a lot of hard work and long hours but it was pretty trouble-free. One of the only major hitches he remembers is when the wiring of the tape recorders on some of the prototypes was different to the final version, this meaning that they couldn't load their own software.

Locomotive develop their code mainly on IBM PC's which they use for editing programs. There's nothing flash about either the offices or the people within. Richard is proud to boast that they don't have a secretary - "If we want a letter done, we sit down and type it ourselves". Job titles are rarely used within the company and I had trouble drawing out of Richard Clayton his actual position. (sitting down -Ed). This typifies the whole structure of Locomotive and everyone who works there shares this philosophy. It is no accident that the Locomotive team are a united force which has been together, in one form or other, long before Locomotive was created. Howard Fisher has now left Acorn to join Locomotive as their marketing manager, to complete the team that was being created all those years ago in Cambridge.

Do they have any ambitions? In character with everything elso about Locomotive, they are happy to continue as back room software writers. It's a trade they know well and who's to argue with that? But being so much in the background does produce its own difficulties, not least of all the problem of obscurity. Typecasting is another factor which is obviously of slight annoyance to them and this comes through when asked about future plans. "We would like to broaden the base of what we write. We don't want to only get known as a company that can write a BASIC language", says Howard Fisher.

Locomotive have never had to solicit work, it has always come to them. At a time when the computer industry is going through upheaval and turmoil, Locomotive, in common with Amstrad, are succeeding where others have failed.

If there are unsung heroes in the Amstrad market, Locomotive can claim the title with ease. With a team of hard working, professional writers who all know and respect each others work, the writing of software is something they manage with consummate ease. The software they have developed and the way in which they work is a credit to all programmers and a lesson in how to run a software house. With absolutely no excuses for the pun, they are truly a company that is going along the right tracks. ACU

MACHINE CODE MOZART

Part 3 by Richard Sargent

This month, as promised, the machine code bytes return in modest force to display notes on the screen as they are played. There's more too on random-tune generation.



Machine-code comes into its own when fast access to the screen is required and also when the individual bits in a byte need to be manipulated. The source-code listing given in this concluding article on machine-code sound, illustrates both these features. If you followed the Mozart listing, then you will find yourself on familiar ground with this one. There is a notetable (NTAB) and a bartable (TUNE) and a delay loop (L3 & L4) controlled by a TEMPO variable. The whole program, however, is very much shorter. What it does is play 48 notes into one of the PSG (programmable sound generator IC) channels. The music is part of the verse from a traditional song (thus circumventing copyright problems again), but unlike Mozart, which played to a lifeless screen, this program displays the notes and the words as the tune is played.

In addition, in order to illustrate the memory-saving techniques which can be applied to machine-code data areas, the musical notes, (of which there are 48) are packed into 24 bytes. This gives a saving of 50% which, when applied to large notetables, would be invaluable. This process is called COMPACTION and we'll look at it first.

The tune played by the program is based on an English folk song called Ramble-Away and it was chosen because it ranges over just 15 notes of the scale. If the lowest note is 01 and the highest is 0F then it is clearly a waste of memory to store each note in a byte capable of holding 255 different note values. The note can be stored in a nybble - that is 4 bits - and so two notes can be compacted into a byte. This particular style of compaction is easy enough to do by hand; although, as we shall see, there are more complicated forms of compaction which require purpose-written programs to perform the encoding process. In Ramble-Away the first four notes are 08, 0A, 0A and 0F and are thus entered into memory as two bytes, 8A and AF. When the program wants them unscrambled, the Z80 rotate instruction (RRCA) is used to shift the contents of the byte to the right, and a mask instruction (AND 0F) is used to wipe away unwanted data. Thus, to unpack the compacted byte 8, pointed to by the HL register, the following tasks would be performed:

```
LD A, (HL)
RRCA
RRCA
RRCA
RRCA
AND 0F
; A now holds 08
CALL SOUND (first note)
LD A, (HL)
AND 0F
; A now holds 0A
CALL SOUND (second note)
```

You will notice that the unpacking is only needed with every other note, whereas the masking is required for each note. In the main program it takes 5 lines of code and a 5-line subroutine to unpack the code:

LD A, (HL) ; obtain compacted byte
INC (IY"14) ; toggle evens counter
BIT 0, (IY"14) ; need to unpack byte?
CALL Z, UNPACK ; subroutine contains RRCAs
AND 0F ; wipe upper nybble
... and so on - two passes through this
... code produce the two notes.

But what of tunes which have a range of notes greater than 15? They can still benefit from compaction, but the saving in memory space is not so spectacular. The notes of Mozart's Disc Waltz could, with a little

fiddling, be compacted by 33%. The high notes, or melody line, could be allocated 6 bits - 64 notes could be stored there. The bass notes (on sound channels 2 and 3) would require trimming so that they ranged over 32 notes, taking 5 bits and then another 5 bits of storage space. Thus, 16 bits or 2 bytes could handle the notes instead of the 3 bytes used in the program. Encoding the music in the first instance would require some effort, and unpacking the bytes would require some additional Z80 rotate and shift instructions, but it can be done.

Musical Displays

The good news is that the Ramble-Away program draws staves, ledger lines notes and sharps on the screen. The bad news is that the musical manuscript is drawn vertically, which can lead to severe neck strain while viewing. On the other hand, it makes the programming straightforward, and makes no difference to hard copy print-outs which can be turned on their side.

Staves and ledger lines are shown in Figure one. The upper five solid lines represent the treble stave, the lower five the bass stave. Ledger lines are not normally printed except when needed by a note which falls outside the compass of the stave, so the program is cheating a little by creating dashed lines. The notes themselves are all translated to crotchets, but they are printed without their "tails" and the sharp symbol (the hash sign) is positioned in front of the note to which it refers. The actual screening of all this information is done by the OUTST subroutine at address 8259 using the ROM's "output a character to the text VDU" routine TXT OUTPUT at BB5A. It takes just 10 bytes of code - scrolling is automatic and so the whole musical manuscript moves up the screen as the notes are played. However, assembling the notes prior to screening them is a little more difficult. To screen each note, the cursor has to make two passes along two rows of the 80-column screen. Pass one prints the staves, ledger lines, and hash symbol (if needed). Pass two, on the row beneath, prints the staves, ledger lines, notes and words (if any). All this information is assembled in a scratch-ram area called USTRIP (for row 1) and STRIP (for row 2). For each note played, this area is first prepared (address 8182 to 8193), then loaded with notes and sharps (address 81AC to 81D0) and with words (address 81DC to 81EC), and finally printed to the screen (address 820C to 8215). It all happens very quickly on the 80-column screen, where two scrolls occur for every note played, and a little slower on the 40-column screen where there are four scrolls per note.

The note values 1 to 15 are translated into their correct stave positions by the TRANSL table at 8113. This table also informs the routine at L11 when sharps need to be loaded into USTRIP. The program will cope with the range of 52 notes which it is possible to fit onto the screen-manuscript, so Mozart can be modified to give a VDU display.

The Ramble-Away program is run by CALL &8050 and if you also use the tiny BASIS auto-run program (Listing 2), then you would use GOTO 20 to replay the tune on subsequent occasions. There is little to be changed in machine-code program. The TEMPO byte is at 8153, and the PSG is initialised by the code in the FLAG bytes -the 13 bytes there, are destined for the 13 registers of the PSG chip. The TUNE and the WORDS can of course be altered, but note that there is always at least one printable character per note held in the WORD table. The å marker separates the text, and there are 48 such markers, matching the 48 notes in the tune. If there were fewer word-and-marker groupings than the number of notes available, then the software would crash.

Random Tunes

The final offering is Listing 3, and it's a BASIC program which allows the Amstrad to be non-musical in the same way as the party-bore who insists on playing "Chopsticks" whenever he sees an unattended piano in the room. Random music is, to put it mildly, difficult to achieve. If you've caught the machine-code bug you might try filling the PSG registers with random numbers. Obtaining a random number at machine code level is as simple as reading the Z80 refresh register, which, in theory, provides a random number in the range 0 to 255. This is very convenient since most of the PSG registers need numbers in this range, and if they need less, such as the noise register which requires five bits, they will ignore the extra bits given to them. However, the following piece of code will almost certainly lead to chaos, so you probably shouldn't try it.

```
LDA,R;obtainarandomnumber
LDC,A;propare to send to PSG
LDA,R;obtain another random number
ANDOF;now in the range 0-15
;it represents a PSG register
CP7;loading reg 7 is unwise
RETZ;so don_t do it
CALLBD34;send A and C to PSG
RET
```

The problem is that loading PSG registers 7, 14 and 15 with anything that the Z80 refresh register happens to throw up is not a good idea. As explained in part 2 of the series, certain bits in register 7 control the PSG's ports, and the Amstrad's operating system demands that the port of register 14 is left well alone.

The random numbers must therefore be filtered before they are passed to the PSG.

Registers 0, 2 and 4 hold the four most significant bits of the tone period and values higher than 1101 (13) produce tones which are below C in the 1st octave. Furthermore, if any of these coarse-value registers are holding zero, registers 1, 3 and 5 should not be allowed to hold a value lower than about 22 or the sound will be of too high a frequency to be heard. Register 13 controls the shape of the amplitude of the



waveform, and certain values in this register can cause harsh clicking sounds to be produced. Finally, registers 8, 9 and 10 should not be given values less than 3, or else the sounds will be too quiet to be heard (which may well be a good idea). Filtering takes a lot of code, and the end result is a series of random tones which only occasionally, by luck, match the frequencies of the equal-tempered chromatic scale. I cannot think of an application for such a program, other than annoying the neighbours.

To obtain random musical notes, you will need a note look-up table, and, unless the music is intended to take place inside a fast arcade game, the code is best written in BASIC. When you play the black notes at random on a piano, they tend not to sound discordant, as random white notes do. This fact (law, phenomenon or piece of luck) can be put to good use as "Everlasting Ebony" illustrates. In this program, black notes' values (they are, of course, sharps) are loaded into the B(n) array. They are then played in varied sequence, forever, or until ESC is pressed. The RND function is used at various points to ensure that no regular pattern is followed. RND, which always looks complicated when it appears in the program, works like this:

```
N=INT(RND(1)*T)+1)
```

places an integer random number in the range 1 to T into the variable N. Often the integer funtion can be dispensed with, leaving Nfi(RND(1)*T)"1

The program uses T or 15 consecutive sharps, although the amount can be easily altered. A starting note is selected in line 230. Let's assume b(4) was chosen. Lines 260/270 "flip a coin" to see whether the program will play up the scale or down the scale - there are separate routines for each eventuality. Assuming the sequence chosen is a rising scale, line 300 determines S, the number of notes to be played. Line 310 represents a joker in the pack. The RND function chooses a number between 1 and 100. If the number is over 80 (which it should be 20% of the time) then the UP routine is abandoned before it gets under way and another "starting note" is chosen at line 230. If the joker is successfully navigated, then S number of consecutive notes will be played, providing the limits of B(n) are not exceeded. To add spice to the music another RND at line 330 occasionally causes the length of the note played to be doubled. Line 340 actually plays the note -just one channel of the PSG is used. At the end of the FOR-NEXT loop, control passes back to the coin-flipper at line 260, or the program might decide to move directly to the DOWN routine at 420. Unpredictable things, computers. The results, however, are quite pleasant, with a decidedly oriental flavour. Where are these Amstrads made?

Listing 1

(Assembly source listing (listing 1)

```
ORG#8050
ENT#8050
JPSTART
SYM1:EQU#95
SYM2:EQU#E7
SYM3:EQU#3A
SYM6:EQU#23
LEN:EQU9
NCHAR:EQU80
MCSR:EQU#BD34
USTRIP:DEFS80
STRIP:DEFS80
;16POSSIBLENOTES,THEREFORE
;32ENTRIESINTHEPERIOD-VALUESTABLE
NTAB:DEFB53,3,7,3,98
DEFB2,63,2,32,2,1,2,228,1
DEFB201,1,176,1,151,1,128,1
DEFB107,1,87,1,67,1,49,1,32,1
;
TRANSL:DEFB2,#82,3,4,#84,5,#85,6,7,#87,8,#88
DEFB9,#89,#0A,#0B,#8B,#0C,#8C,#0D,#0E
DEFB#8E,#0F,#8F
DEFB#10,#90,#11,#12,#92,#13,#93,#14
DEFB#15,#95,#16,#96
DEFB#17,#97,#18,#19,#99,#1A,#9A,#1B
DEFB#1C,#9C,#1D,#9D
DEFB#1E,#9E,#1F
;
FLAG:DEFB0,0,0,0,0,0,0,#38,#0F,#0F,#0F,0,#20
TEMPO:DEFB#80
TOG:DEFB0
NDE:DEFB0,0
WPOINT:DEFW0
START:LDIY,FLAG
CALL#BC14
DI
XORA
L1:PUSHAF
LDC,(IY+0)
CALLMCSR
POPAF
INCA
INCIY
CP#0D
JRNZ,L1
LDIY,FLAG
LDHL,WORDS LD(WPOINT),HL
LDHL,TUNE
LDB,48
PERIOD:PUSHBC
;PLAYEACHOF48NOTES
PUSHHL
LDHL,STRIP-1
LDIX,STRIP
CALLSETUP
LDHL,USTRIP-1
LDIX,USTRIP
CALLSETUP
POPHL
LDA,(HL)
BIT0,(IY+14)
CALLZ,UNPACK
AND#0F
CP0
JRNZ,L11
LDDE,NDE
JRL13
L11:LDB,A
PUSHHL
LDD,0
LDE,A
LDHL,TRANSL-1
ADDHL,DE
LDA,(HL)
LDIX,STRIP-1
LDD,0
RES7,A
LDE,A
ADDIX,DE
LD(IX+0),SYM2
BIT7,(HL)
JRZ,OPT5
LDDE,NCHAR
ORA
PUSHIX
POPHL
SBCHL,DE
LD(HL),SYM6
OPT5:POPHL
LDDE,NTAB-2
L14:INCDE
INCDE
DJNZL14
L13:PUSHDE
PUSHHL LDHL,(WPOINT)
LDDE,STRIP+34
WL1:LDA,(HL)
INCHL
CP"@"
JRZ,WL3
LD(DE),A
INCDE
JRWL1
WL3:LD(WPOINT),HL
POPHL
POPDE
LDA,(DE)
INCDE
LDC,A
LDA,0
CALL#BD34
DI
LDA,(DE)
LDC,A
LDA,1
CALL#BD34
DI
;TEMPO
LDB,(IY+13)
L3:LDC,0
L4:DECC
JRNZ,L4
DJNZL3
LDDE,USTRIP
CALLOUTST
LDDE,STRIP
CALLOUTST
BIT0,(IY+14)
JRNZ,BUMP
L5:INC(IY+14)
POPBC
DECB
JPNZ,PERIOD
CONT:LDA,7
LDC,#3F
CALLMCSR
EI
RET
;ANDSOBACKTOBASIC
BUMP:INCHL JRL5
;
SETUP:LDA,SYM1
LDB,16
LX1:INCHL
LD(HL),#20
INCHL
LD(HL),A
DJNZLX1
LD(IX+1),SYM3
LD(IX+3),SYM3
LD(IX+15),SYM3
LD(IX+27),SYM3
LD(IX+29),SYM3
LDB,49
LX2:LD(HL),#20
INCHL
DJNZLX2
RET
;
OUTST:LDB,NCHAR
SLOOP:LDA,(DE)
INCDE
CALL#BB5A
DJNZSLOOP
RET
UNPACK:RRCA
RRCA
RRCA
RRCA
RET
;
TUNE:DEFB#8A,#AF,#DA,#86,#8A,#88
DEFB#8A,#AF,#DA,#86,#8A,#88
DEFB#1A,#BA,#A8,#63,#56,#55
DEFB#8A,#BA,#A8,#A1,#35,#33
WORDS:DEFM"AS@I@GO@A-@WALK-@ING@"
DEFM"DOWN@BIR-@MING-@HAM@STREET@@"
DEFM"IN@MY@NEW@SCAR-@LET@JAC-@KET@"
DEFM"ALL@NEAT@AND@COM-@PLETE@@"
DEFM"THE@GIRL-@S@ALL@SA-@-AY@"
DEFM"AS@THEY@PASS@ME@BY@@"
DEFM"IS@THAT@THE@YOUNG@MAN@THEY@"
DEFM"CALL@RAM-@BLE@A-@WAY@@"
END
```

(Listing 1a)

(Machine Code generating program)

If you do not have an assembler you will need to type in this program to make the

machine code file "RAMB.BIN". This is used by listing 2. Type the program in and save it. Reset the computer. Type in listing 2 and save that on a different tape. Take the first tape and load listing 1a. Take the tape with listing 2 and put it into the cassette unit with the tape wound past listing 2. Do not load listing 2. Type RUN. This will run listing 1a which is in memory. If it all checks out OK the file "RAMB.BIN" will be saved to the tape. This is NOT the same as saving listing 1a. Reset the computer, wind to the begining of the tape and run listing 2. This will load the machine code and play the tune. If you have a disc drive then simply save Listing 1a and Listing 2 on the same disc. Run listing 1a then listing 2 the first time you run the program, after that just run listing 2.



```
10_machine code maker
20_save this program BEFORE running
30 MEMORY &7FFF
40 MODE 2:PRINT"This will take some time
.Working on line:":PRINT
50 ln=1000:valid$="0123456789ABCDEF"
60 FOR x=&8050 TO &8350 STEP 8
70 FOR y=0 TO 7
80 READ num$
90 FOR n=1 TO LEN(valid$):IF RIGHT$(num$
,1)<>MID$(valid$,n,1) THEN NEXT:GOTO
200
100 FOR n=1 TO LEN(valid$):IF LEFT$(num$
,1)<>MID$(valid$,n,1) THEN NEXT:GOTO
200
110 a=VAL("&"+num$):total=total+a
120 POKE x+y,a
130 NEXT:PRINT CHR$(11);ln:READ chk:IF c
hk<>total THEN 300
140 ln=ln+10:total=0:NEXT
150 PRINT"All data OK. Now saving the ma
chine code file_RAMB.BIN_"
160 SAVE"RAMB.bin",b,&8050,&300
170 PRINT"machine code saved - now reset
the computer"
180 END
200 PRINT"The character ";num$;" in line
";ln;"is incorrect please check mag
azine":STOP
300 PRINT"You have entered the numbers i
ncorrectly in line";ln;"please che
ck":STOP
1000 DATA C3,59,81,20,3A,20,3A,20,625
1010 DATA 95,20,95,20,95,20,95,20,724
1020 DATA 95,20,3A,20,95,20,95,20,633
1030 DATA 95,20,95,20,95,20,3A,20,633
1040 DATA 3A,20,20,20,20,20,20,20,282
1050 DATA 20,20,20,20,20,20,20,20,256
1060 DATA 20,20,20,20,20,20,20,20,256
1070 DATA 20,20,20,20,20,20,20,20,256
1080 DATA 20,20,20,20,20,20,20,20,256
1090 DATA 20,20,20,20,20,20,20,20,256
1100 DATA 20,20,20,20,3A,E7,3A,20,507
1110 DATA 95,20,95,20,95,20,95,20,724
1120 DATA 95,20,3A,20,95,20,95,20,633
1130 DATA 95,20,95,20,95,20,3A,20,633
1140 DATA 3A,20,20,20,20,20,20,20,282
1150 DATA 20,20,20,20,20,20,20,20,256
1160 DATA 20,20,20,20,20,20,20,20,256
1170 DATA 20,20,20,20,20,20,20,20,256
1180 DATA 20,20,20,20,20,20,20,20,256
1190 DATA 20,20,20,20,20,20,20,20,256
1200 DATA 20,20,20,35,03,07,03,62,260
1210 DATA 02,3F,02,20,02,01,02,E4,332
1220 DATA 01,C9,01,B0,01,97,01,80,660
1230 DATA 01,6B,01,57,01,43,01,31,314
1240 DATA 01,20,01,02,82,03,04,84,305
1250 DATA 05,85,06,07,87,08,88,09,439
1260 DATA 89,0A,0B,8B,0C,8C,0D,0E,476
1270 DATA 8E,0F,8F,10,90,11,12,92,641
1280 DATA 13,93,14,15,95,16,96,17,551
1290 DATA 97,18,19,99,1A,9A,1B,1C,588
1300 DATA 9C,1D,9D,1E,9E,1F,00,00,561
1310 DATA 00,00,00,00,00,38,0F,0F,86
1320 DATA 0F,00,20,80,C0,00,00,48,439
1330 DATA 83,FD,21,46,81,CD,14,BC,1029
1340 DATA F3,AF,F5,FD,4E,00,CD,34,1251
1350 DATA BD,F1,3C,FD,23,FE,0D,20,1077
1360 DATA F1,FD,21,46,81,21,80,82,1017
1370 DATA 22,57,81,21,68,82,06,30,571
1380 DATA C5,E5,21,A2,80,DD,21,A3,1166
1390 DATA 80,CD,32,82,21,52,80,DD,977
1400 DATA 21,53,80,CD,32,82,E1,7E,980
1410 DATA FD,CB,0E,46,CC,63,82,E6,1203
1420 DATA 0F,FE,00,20,05,11,55,81,537
1430 DATA 18,30,47,E5,16,00,5F,21,522
1440 DATA 12,81,19,7E,DD,21,A2,80,842
1450 DATA 16,00,CB,BF,5F,DD,19,DD,978
1460 DATA 36,00,E7,CB,7E,28,0B,11,682
1470 DATA 50,00,B7,DD,E5,E1,ED,52,1257
1480 DATA 36,23,E1,11,F1,80,13,13,738
1490 DATA 10,FC,D5,E5,2A,57,81,11,985
1500 DATA C5,80,7E,23,FE,40,28,04,848
1510 DATA 12,13,18,F6,22,57,81,E1,782
1520 DATA D1,1A,13,4F,3E,00,CD,34,652
1530 DATA BD,F3,1A,4F,3E,01,CD,34,857
1540 DATA BD,F3,FD,46,0D,0E,00,0D,795
1550 DATA 20,FD,10,F9,11,53,80,CD,983
1560 DATA 59,82,11,A3,80,CD,59,82,951
1570 DATA FD,CB,0E,46,20,11,FD,34,894
1580 DATA 0E,C1,05,C2,80,81,3E,07,732
1590 DATA 0E,3F,CD,34,BD,FB,C9,23,1010
1600 DATA 18,EC,3E,95,06,10,23,36,582
1610 DATA 20,23,77,10,F9,DD,36,01,727
1620 DATA 3A,DD,36,03,3A,DD,36,0F,684
1630 DATA 3A,DD,36,1B,3A,DD,36,1D,722
1640 DATA 3A,06,31,36,20,23,10,FB,501
1650 DATA C9,06,50,1A,13,CD,5A,BB,814
1660 DATA 10,F9,C9,0F,0F,0F,0F,C9,727
1670 DATA 8A,AF,DA,86,8A,88,8A,AF,1252
1680 DATA DA,86,8A,88,1A,BA,A8,63,1105
1690 DATA 56,55,8A,BA,A8,A1,35,33,928
1700 DATA 41,53,40,49,40,47,4F,40,563
1710 DATA 41,2D,40,57,41,4C,4B,2D,522
1720 DATA 40,49,4E,47,40,44,4F,57,584
1730 DATA 4E,40,42,49,52,2D,40,4D,549
1740 DATA 49,4E,47,2D,40,48,41,4D,545
1750 DATA 40,53,54,52,45,45,54,40,599
1760 DATA 20,40,49,4E,20,4D,59,40,509
1770 DATA 4E,45,57,40,53,43,41,52,595
1780 DATA 2D,40,4C,45,54,40,4A,41,541
1790 DATA 43,2D,40,4B,45,54,40,41,533
1800 DATA 4C,4C,40,4E,45,41,54,40,576
1810 DATA 41,4E,44,40,43,4F,4D,2D,543
1820 DATA 40,50,4C,45,54,45,40,20,538
1830 DATA 40,54,48,45,40,47,49,52,579
1840 DATA 4C,2D,40,53,40,41,4C,4C,549
1850 DATA 40,53,41,2D,40,2D,41,59,520
1860 DATA 40,41,53,40,54,48,45,59,590
1870 DATA 40,50,41,53,53,40,4D,45,585
1880 DATA 40,42,59,40,20,40,49,53,535
1890 DATA 40,54,48,41,54,40,54,48,589
1900 DATA 45,40,59,4F,55,4E,47,40,599
1910 DATA 4D,41,4E,40,54,48,45,59,598
1920 DATA 40,43,41,4C,4C,40,52,41,559
1930 DATA 4D,2D,40,42,4C,45,40,41,526
1940 DATA 2D,40,57,41,59,40,20,40,510
1950 DATA 4D,2D,40,42,4C,45,40,41,526
1960 DATA 00,00,00,00,00,00,00,00,0
```

Listing 2

```
\
10 REM RAMBLE-AWAY
15 MEMORY &7FFF:LOAD"RAMB.BIN"
20 MODE 2:CALL &8050:STOP
30 SAVE"RAMBLE":SAVE"RAMB.BIN",B,&8050,&300
'
```

Listing 3

```
\
100 REM EVERLASTING EBONY 110 REM BY RAN DAN YAY YING
120 DUR=50:VOL=15:Q=7
130 T=15:DIM B(T)
140 RESTORE 170
150 DATA 451,402,338,301,268
160 DATA 225,201,169,150,134
170 DATA 169,150,134
180 DATA 113,100,84,75,67
190 DATA 56,50,42,38,34
200 DATA 28,25,21,19,17
210 REM LOAD ARRAY WITH BLACK-NOTES
220 FOR N=1 TO T:READ B(N):NEXT
230 N=INT((RND(1)*T)+1)
240 :
250 REM PLAYING LOOP
260 D=INT((RND(1)*10)+1)
270 IF D<6 THEN GOTO 440
280 :
290 REM UP
300 S=INT((RND(1)*Q)+1):Z=1
310 IF (RND(1)*100)>80 THEN GOTO 230
320 FOR X=1 TO S
330 A=0:IF (RND(1)*100)>80 THEN A=50
340 SOUND 1,B(N),DUR+A,VOL
350 N=N+1
360 IF N=T+1 THEN X=S:Z=0:N=N-1
370 NEXT X
380 IF Z=0 THEN GOTO 420
390 GOTO 260
400 :
410 REM DOWN
420 S=INT((RND(1)*Q)+1):Z=1
430 IF (RND(1)*100)>80 THEN GOTO 230
440 FOR X=1 TO S
450 A=0:IF (RND(1)*100)>80 THEN A=50
460 SOUND 1,B(N),DUR+A,VOL
470 N=N-1
480 IF N=0 THEN X=S:Z=0:N=N+1
49Q NEXT X
500 IF Z=0 THEN GOTO 300
510 GOTO 260
```

ACU

AMSTRAD COMPUTER USER

Programs on cassette and DISC!

Yes, most (but NOT all) of the listings from past issues are available (unprotected) on tape and disc from one of our regular advertisers, Garwood (Wholesale) Ltd.

We hope that this service to readers will help solve some of those problems that can occur when typing in programs (and those which occur when typesetting/listing them in the first place...). We cannot guarantee to include all listings - but we may also include some extras that we couldn't find room for in the issue.

**Tape £3.50/ User Club Members pay £3. Discs £6.45, members pay £5.95*

DISC	CASSETTE
£6.45	**£3.50**
(Club £5.95)	*(Club £3.00)*

Only discs carry assembly listings and ASCII text files. Issue 8, 9, 10 & 11 discs also include selected material from the CPM UG library. Interest in the contents of the library has led us to produce the complete index over 3 discs (6 sides) also includes the UserSoft index., which is supplied with a FIND program for searching strings in the text files. Z80 assembler on 8, improved single drive filecopy and MBASIC Biorythm prog. Issue 11 discs include BASICE (and a full .DOC file) the public domain CBASIC-like disc basic.

Please send me the following CPC464 User tapes/discs (delete as appropriate):

Issues 1-3 .. ☐
Issue 4 .... ☐
Issue 5 .... ☐
Issue 6 .... ☐
Issue 7 .... ☐
Issue 8 .... ☐
Issue 9 .... ☐
Issue 10 ..... ☐

Issue 11 ..... ☐
Additions:
Electro Art vol 1 £9.95 . ☐
CPMUG Index 3 Discs in all £15.00 per set.
.... ☐

**I enclose £3.50 per tape or £6.45 per disc Total.. ....*

Name ....
Address ....
Town ....
County ....
Postcode ....
Club membership number ....

Please make cheques payable to: CPC User Soft
Send to
Garwood Wholesale Ltd,
45 Plovers Mead, Doddinghurst,
Brentwood, Essex. CM15 0PS
UK post and VAT included.
Overseas customers please add £2 for air postage outside Europe, £1 for Europe postage.

CPM SOFTWARE

IT'S THE REAL THING ......Plus!



Yes, thanks to Amstrad's new CPM Plus systems with a wopping great big 61k of TPA, all those lovely CPM classics will now run without compromise. In fact, you'll find the classics have more space for data, since most CPM80 programs only expect to find around 55k of TPA. Sorcim's SuperCalc2 becomes SupremeCalc2, MicroPro's WordStar becomes WordGalaxy.

Less well known but functionally superior products also sparkle on Amstrad CPM Plus. The ultimate 8bit (Wordstar compatible plus) wordprocessor with built-in mailmerge, NewWord complements the ultimate 8bit spell checker: Oasis Systems Word Plus in an unbeatable £149 package.

You don't need a calculator to work out that Software Technology's Cracker Plus spreadsheet and mathematical modeller at £49 is an absolute bargain for Amstrad CPM Plus users.

Aha, but where can you get them on a 3 inch disc?

Simple, call NewStar Software Ltd., specialists in Amstrad CPM Plus installations. We will supply your program custom installed for your Amstrad 3 inch system, state the model when ordering. There's also a number of classics available for Amstrad CPM2.2: Caxton's Cardbox, Touch 'n Go and and Brainstorm for example. Our catalogue indicates availability.

NewStar Software has been specifically set up in conjunction with the UK's leading trade software source to provide a retail mail order service to Amstrad CPM users. Details of customer support services and on-line assistance are supplied with our catalogue.

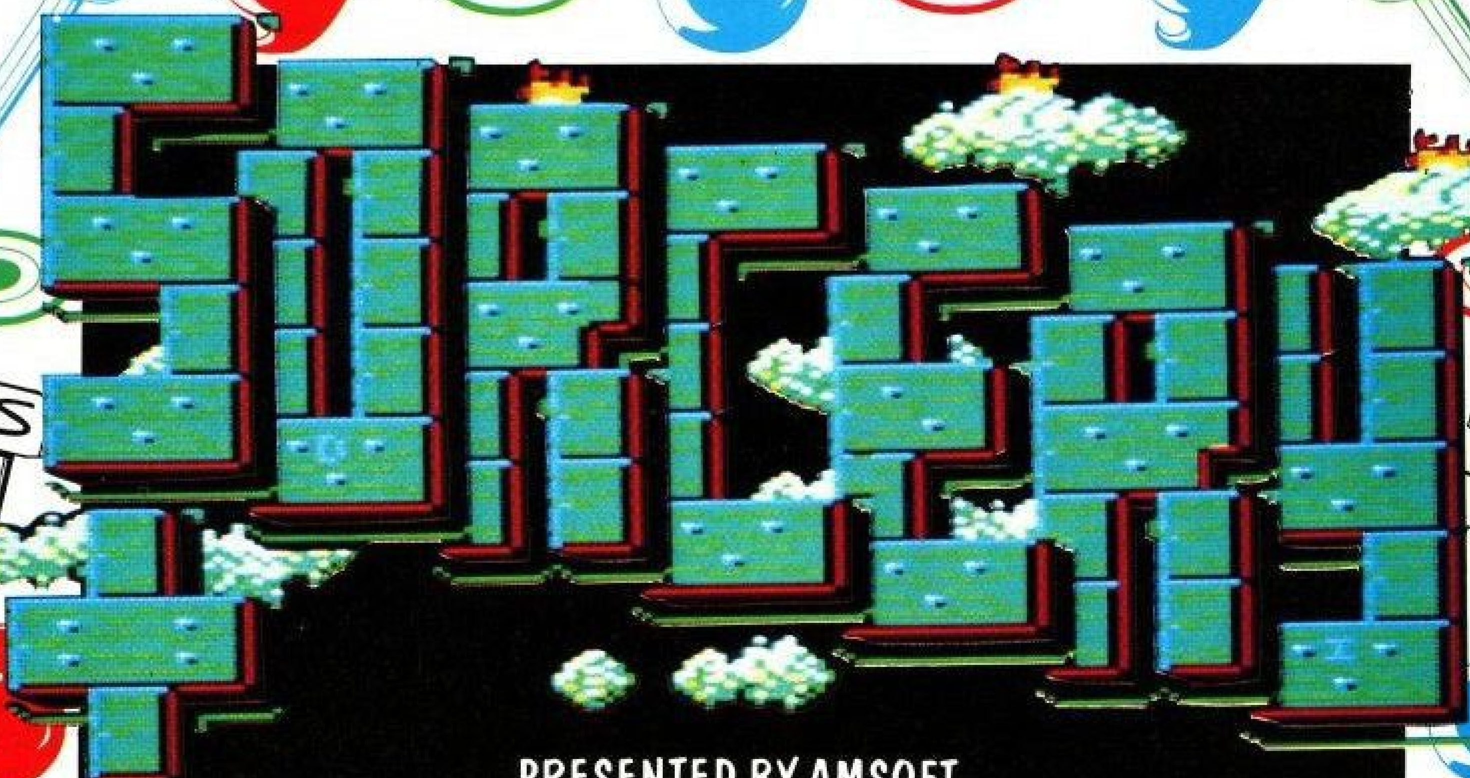
NewStar Software Limited.,
45 Plovers Mead, Brentwood,
Essex. CM15 0PS.

☎ 0277 823747. Overseas and trade enquiries welcome. (A member of the Garwood Group)

The complete Computer System now has the Complete Software System.

Nevada COBOL £39.95

Now available on 3 inch disc for Amstrad CP/M (2.2 and Plus)



PRESENTED BY AMSOFT

Well... here it is !
The follow up to the best selling Amstrad game Sorcery
We've put it on disc, added many more colourful locations and new features, such as saving the hi-score table to disc and displaying a running score.
This new version is a must to all Amstrad owners with disc-drives.





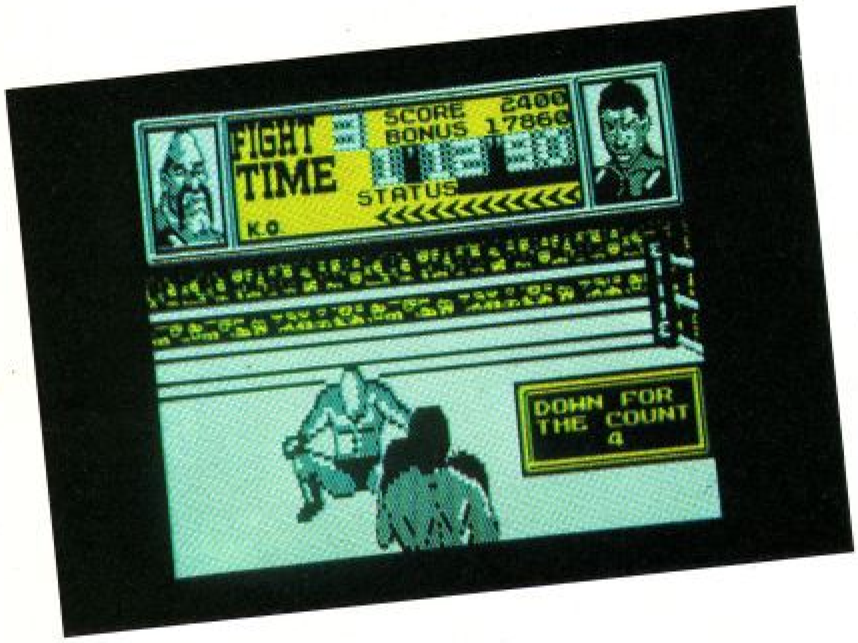




PRICE £13.95

AVAILABLE ON DISC ONLY

Frank Bruno's Boxing



If, like me, you are a 9 stone weakling, you probably find boxing about as interesting as a pro-celebrity washing up, but once the magic of a computer game has been added Frank Bruno becomes someone to take note of.

Frank Bruno's Boxing is based on the arcade game "Punch Out", this can sit in an arcade surrounded by hundreds of machine gun touting commandos, horribly beweaponed sports cars and cannon firing tanks and Punch Out will still seem the most violent game in the room. Perhaps it is the machine's voice synthesis or the second screen above the first which displays a picture of the opponent but it is probpably the sheer violence which makes the game stand out, and which makes it fun.

The transition from dedicated arcade hardware to the Amstrad has been made incredibly smoothly. The second screen has been compressed into the first so that the digital timer, the picture of your fellow pugilist, and the all important strength meter are all still displayed.

You take on the role of Frank Bruno, battling against an international cast of agressors. The controls take some getting used to. It seemed easiest to play with a joystick to control the raising and lowering of your guard, ducking and weaving and to use the keyboard for left and right punches. It is not possible to control your feet which is just as well since, with these opponents, I would have been over the ropes and out of the gym before you could say Brut 33.

Each bout is won on a knockout with a count of ten. Every time you land a blow your strength meter increases and that of your adversary falls. A second meter measures how far you are from being able to plant a knockout blow. This is an accumulator and requires a good deal of normal pounding before the magic K.O. lights up. A gentle tap of the space bar then lands a sledgehammer punch on your foe's jaw. It takes three falls before the count reaches ten, if the time expires before either fighter has been beaten you have to fight again. If you emerge victorious you are given a special code which corresponds to the number of the next fight and your initals, you have to type this in to load the next pretender to your crown.

Challengers come from Canada, Japan, USSR, Africa, France, Italy, Australia and the USA. Each opponent has his own tactic, the Canadian Crusher bounces back from each fall with a devastating blow which will floor you unless you dodge it in time. Fling Long Chop from Japan will resort to a fiendish flying kick if you start to get on top of him, not quite Queensbury rules but then you don't have time to complain as you jab the duck button. Having conquered Fling's feet you have to worry about Andra Puncheredov's Russian dancing. His favourite tactic is to head butt you; getting your blows quickly here seems to be the golden rule. The fourth opponent is the African "Tribal Trouble" I would welcome advice on defeating him, and any of the later opponents, news of what happens once you have beaten the final boxer would also be warmly received.

Frank Bruno's Boxing is one of those "just one more" games, addictive and well written. There is a fair bit of flicker from the sprite, especially when you jump up and down after winning a bout. The software scrolling as you move around the ring works well and there are plenty of little touches, the way Tribal Trouble looks both ways before clobbering you, the way Canadian Crusher slumps as you fell him, the digital clock and the convincing thud as leather meets cheek.

Improvements? Well the speech of the arcade original could have been added by using the SSA-1 speech synth, the gorilla who sits in the audience in the arcade has been left out and the instructions are a bit woolly but, other than that, there is little scope for complaint. It is a shame that there are no plans for a disc version, even the short wait for the tape to load is an annoyance to those used to the speed of click wirr.

The name "big Fella" may add to the appeal of this program, but for me it is the fun of watching the baddie recoil from my uppercuts which makes this game a knockout.

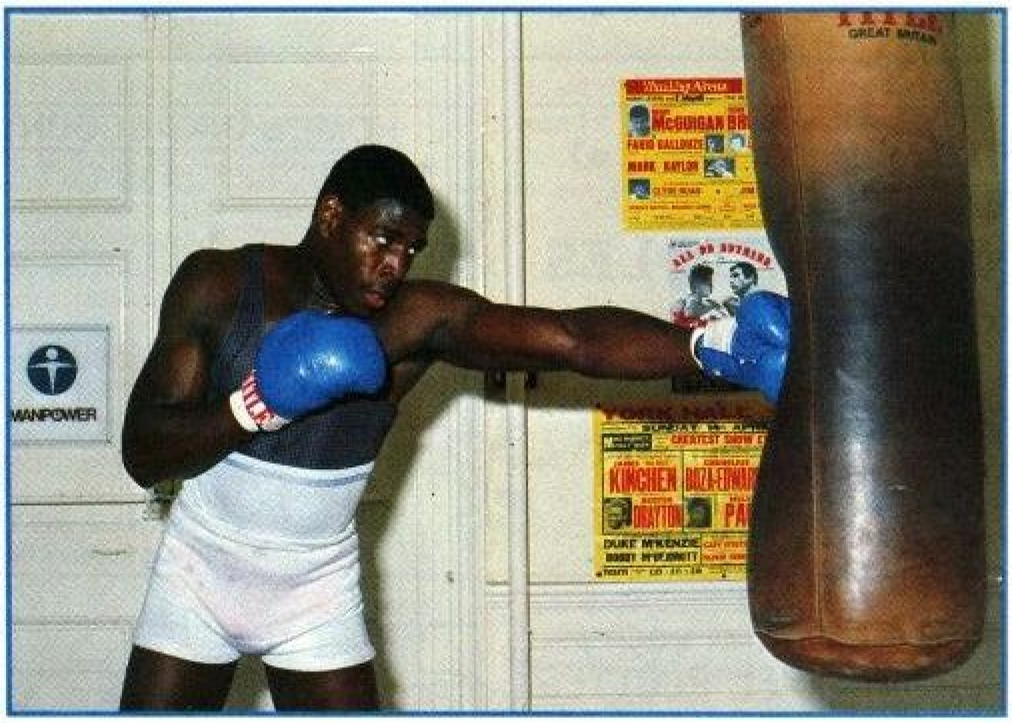


ACU

The Big Fella

If the word boxing conjures up images of Arthur Daley type characters smoking cigars and wearing expensive 'dodgy' suits in the bar of the Royal Albert Hall, then think again. A trip to Terry Lawless' gym in the heart of London's East End will reveal a bunch of dedicated, fit and extrememly 'undodgy' young men hoping to succeed in the tough world of boxing. One of the most successful boxers in the Terry Lawless 'stable' is Frank Bruno, the gentle giant who has just lent his name to the knock-out new game from Elite -'Frank Bruno's Boxing'.

The 23 year old boxer, known as 'the Big Fella', is in heavy training at the moment, preparing for the European championship fight against the Swede, Anders Eklund. A typical day's training for Frank Bruno begins with a run of about 5 or 6 miles, it is followed by a swim and, in the afternoon, he takes himself off to the gym for a few hours training under the watchful eye of his manager, Terry Lawless. In the evening, Frank likes to relax by taking a long walk in the forest near his home. Although boxing is Frank's first and foremost sport, he also enjoys a round of golf and a good run around the football or cricket pitch. Frank's next fight may not be in this country although, of course, he would prefer it to be here; it is understood that Anders Eklund wishes the fight to be in Denmark.



Frank Bruno has certainly had an impressive record up to now. Of his 20 amateur fights, he won 19 and he was the youngest ever British Amateur Heavyweight champion. Frank's professional career has been no less glorious. Of his 26 fights, he has won 25, and 24 of those were either by stoppage or knockout. In his last fight in May, Frank was beaten by James 'Bonecrusher' Smith but he has certainly recovered from any set-back the defeat may have caused him and is raring to go. Especially since his fight for the European championship has been postponed so many times. Perhaps Eklund is getting scared!

When I met Frank, I was absolutely terrified at the prospect of shaking his hand, I mean, I was really scared for my hand. Any fears I had, however, soon disappeared when I discovered that this Goliath had the grip of a David. (I wonder if his opponents would agree with me.) The man has to be seen to be believed; he is 6 foot 3 inches tall, has a 46 inch chest and weighs 16 stone 5 pounds; he is huge-and the comment on everyone's lips is: 'I wouldn't like to get into a row with him.' The truth is that you are very unlikely to do so since Frank Bruno's fighting stays in the ring and I dare anyone to find any reason for being angry with him. Indeed, one would expect a certain amount of jealousy among Terry Lawless' 'boys'; there is none. Frank is very popular with the other young men in his gym as his lovable personality wins everybody over.

Frank became interested in boxing around the age of 8 and took it up with a lot a encouragement from his father; his 3 sisters and 2 brothers never miss his fights. Although, he did tell me that his Pentecostal mother did not attend his fights. Probably because she does not want to see some of the injuries her son may have to sustain. Frank admits that some of injuries hurt a great deal but, whatever he may have suffered in the past, it does not seem, in any way, to be affecting his current form. Frank is very level-headed in his attitude towards boxing: he loves it and will carry on with it until he feels he is ready to quit. He has little time for arguments calling for a ban on boxing. If a man wants to box, then he will box. When I asked what his feelings were concerning the Swedish ban on boxing, he said that he thought it was stupid and added: 'You may as well ban something like horse racing.'

It certainly seems that Frank's commitment to boxing and keeping himself fit, is total. In fact, he has just come back from holiday in Cornwall where he spent his time swimming, wind-surfing, running and having a go at just about every sport one could possibly think of in Cornwall. Terry Lawless explained to me that whenever Frank has to go anywhere, either on business or holiday, he always insists that his hotel has a gym and that there is a swimming pool nearby; Frank also has the knack of finding the best climbs and walks in the area.

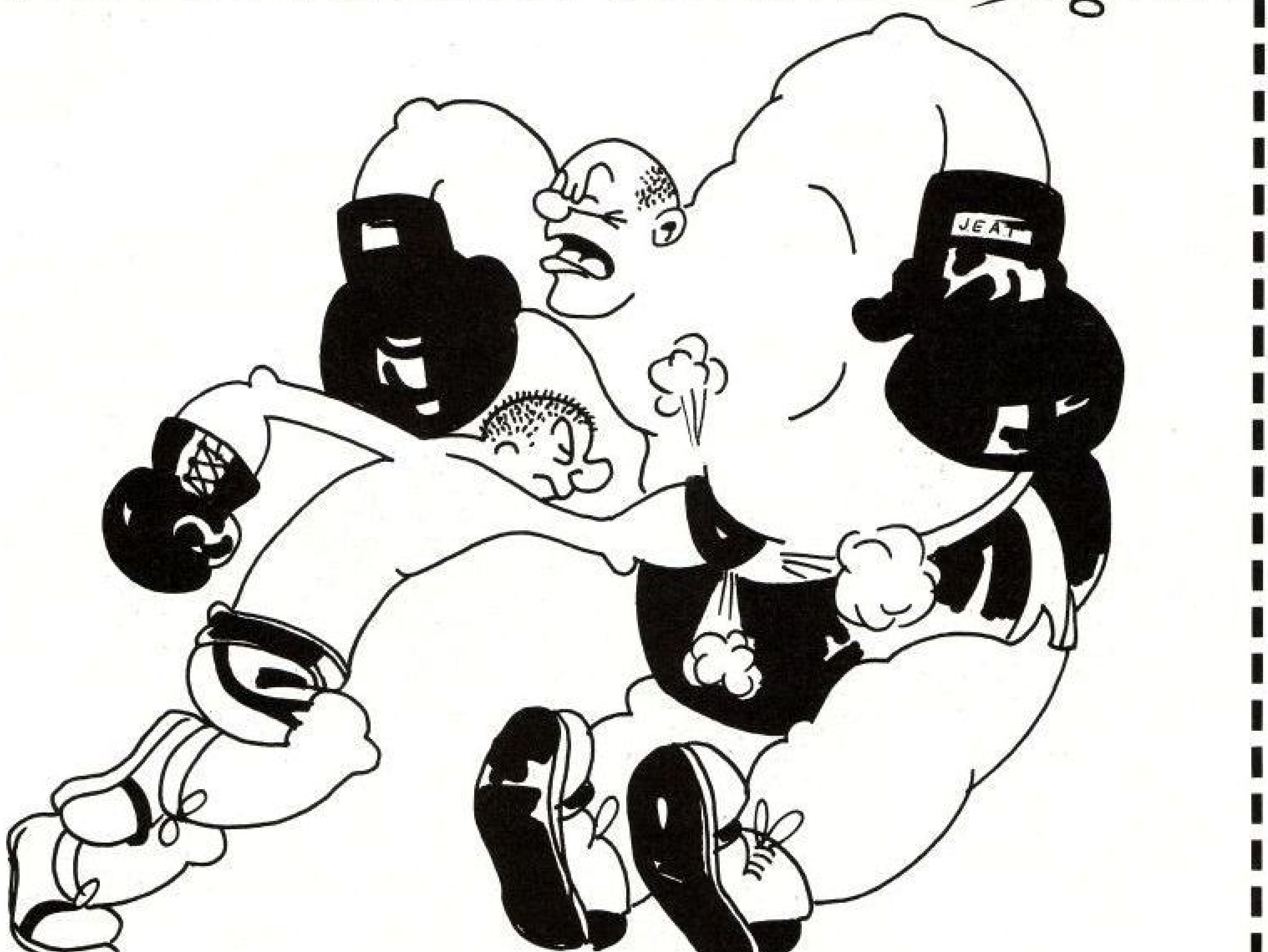
As far as Elite's game 'Frank Bruno's Boxing' is concerned, the real Frank Bruno just loves it and is working on his hi-score. Frank does have his own computer, not that he gets much time for it though with all that training he has to do. Frank reckons that it helps his mental concentration and it's also a lot of fun.

When I asked Frank Bruno why he boxes he replied rather cynically: 'I do it for the money.' Being witness to all the effort and concentration he puts into his training, I remain unconvinced: I am sure he really does it to get computer games named after him!

SO YOU WANT TO BE A BOXER?

Elite has chosen Amstrad computer users to have the exclusive opportunity to win a pair of boxing gloves signed by the one and only Frank Bruno. Never before have we been lucky enough to give away such an imaginative prize. But, the story does not end there. Not only are Elite giving away original Frank Bruno gloves and a copy of the game to the winner but the 99 runners-up will also receive a copy of it. (just read our review and you'll see just how good it is.)

Below you will find a picture of a typical boxing scene but there's one thing missing. Yes you've guessed it (or have you?) it's the ref. Now this is where you come in. All you have to do is draw a cross where the ref's head should be and then send it in to us. Simple isn't it?



Rules

1. The winner will be the first correct entry and the runners-up will be the following 99 correct entries drawn on 31st October 1985.

2. There is no limit to the number of entries any individual can make, all entries, however, must be on an official entry form.

3. No correspondence can be entered into regarding the competition. Entries cannot be returned.

4. The judges decision is final, No employees of Amstrad, Amsoft, or Amstrad User, nor their relatives may enter.

Official Competition Entry Form

Name ....

Address ....

....

Entries should be sent to:

Elite Competition, Amstrad User Magazine
169 Kings Road, Brentwood, Essex. CM14 4EF

Amsword and Easi-Amsword

Amstrad micros are extremely good for playing games on. They're also a lot more than this, particularly since the introduction of the DDI-1 disc drive and the CPC664 with its built-in drive, they have gained considerable potential in the small-business market.

There are many business applications where micros can be valuably employed, but the one which springs immediately to mind, and where the most obvious benefits may be seen, is the word processor.

Anybody accustomed to using a conventional typewriter, even a good touch-typist, knows how difficult it is to produce a word-perfect letter or report without the judicious dab of correction fluid. When you need to produce a quotation or answer an enquiry, it's very important that the document you send out should represent your company at its best.

The introduction of a word processor will improve this aspect of your business no end, and offer, in addition, a number of other benefits, especially if your business involves any form of advertising by mail.

This review describes the two word processors marketed by Amsoft: Easi-Amsword and its big brother, Amsword (sometimes known as Tasword 464). The first of these is rather more of a text editor than a full-blown word processor, as it lacks several of the features expected of a professional word processing program. It is fine for producing letters and short correspondence, however, and has the virtue of being one of the cheapest programs of its type on the market.

The package consists of a cassette and a small instruction book - small enough to slip inside the cassette case, in fact. Although the format and typeface are small, the instructions are quite clear and follow your likely method of work. They start with descriptions of all the options on the main menu, which are:

1. Create
2. Edit
3. Name
4. Retrieve
5. Save
6. Print
7. Tapeprint
8. Define Colours

Running briefly through these options should give you an idea of what Easi-Amsword can do. 'Create' is selected when you want to start a new document, and asks you first to enter a name for it. In contrast, 'Edit' allows you to make changes to an existing document. 'Name' is more accurately 'Rename', and gives you the option of keeping several copies of your text under different names.

'Retrieve' and 'Save' handle the filing of your documents on cassette. Easi-Amsword doesn't work with discs, as there is no way to get the program to accept the '|TAPE' and '|DISC' commands. This is a shame, because if you upgrade you system, your Easi-Amsword will become redundant.

REVIEWED BY

SIMON WILLIAMS

'Print', as you might imagine, is the option you select to print your document. It offers a number of further options before printing, so you can change the format of the text. Any print options you select will be saved and retrieved with the document - a useful feature. 'Tapeprint' is an extension of the 'Print' option, and will retrieve and print each document on a cassette in turn, completely automatically. It's hard to think why you might want to do this, though.

The last option, 'Define Colours', allows you to select one of four combinatons of pen and paper colours while using the word processor. These combinations are good, but it might have been better to offer a completely free choice.

The creation and editing of text with Easi-Amsword is pretty basic. You can insert and delete text on the screen (although deletion is very slow), but you cannot move sections of a document around, and tabulations are the only form of formatting supported. You can work in 40 or 80 column modes, but you must select the mode before creating your document, and you cannot change it later. You can move around the text quite fast, using the cursor keys, and in combination with (SHIFT) and (CTRL), you can force a new page (when the document is printed) by inserting a smiley face character in the text - an amusing idea.

When you select the print option, you are offered a further set of options which govern the way the text will be printed. While they are by no means comprehensive, they do give some control over the printed page by allowing you to set up margins, page width and length, justification and page numbering. You can also set up an initial command sequence for your printer, if it needs one.

Easi-Amsword offers none of the formatting facilities often expected of modern word processors. There is no centring of text, no headers or footers (although you can automatically print page numbers) and no way to use the special features of your printer from within the text. Perhaps it's unfair to expect this kind of sophistication on a product at the lower end of the price spectrum. Easi-Amsword is certainly quite capable of handling the production of letters, and with a little ingenuity it can be used for a certain amount of automated correspondence (by storing a letterhead file, for instance). If you want more than this, however, you really need to start looking at Amsword itself.

Amsword (Tasword 464) starts with a more comprehensive specification. It aims to provide all the facilities you might sensibly want to use in the preparation of a personal or business document. It starts by assuming you want to work with 80 column text, and that you'll probably want reminders of the various controls used by the word processor. It therefore displays seven lines of information at the top of the screen (which may be supressed if you need to see more of your text), and two status lines at the bottom.

Amsword tries to show you on the screen what your document will look like when printed. The fashionable term for this philosophy is WYSIWYG (pronounced wizz-i-wig - short for 'What You See Is What You Get'). Thus, if you centre a line of text, it will be centred on the screen and if you want the text to be divided into pages, the page boundaries will be shown on the screen as you come to them.

The documentation supplied with Amsword is a 46 page manual which is a comprehensive reference aid to the program. It covers all the features of the program in detail, but is not a tutorial guide. To partly overcome this omission, a tutorial text file is provided on the Amsword cassette or disc. This tutorial runs through most of the commonly used features of the program, and is well put together. Perhaps I'm too traditional, but I would have found a tutorial section within the manual easier to use - it takes a long time to load from cassette.

Tasman Software have followed the time-honoured tradition among 'serious' word processors, and use (SHIFT) and (CTRL) sequences to call up the various functions of the processor. To centre a line of text, for instance, you move the cursor to the required line and press (CTRL) and 'W' together.

'Why W?', you may ask. I did, and was told that the controls are marked out in groups on the keyboard. Thus, to move text left you press (CTRL)Q and to move it right you press (CTRL)R. This is all very well, but there is no diagram of these groups in the documentation, and to the casual user they appear pretty arbitary. I feel the mnemonic systems used by some other word processors (the Perfect suite, for instance) are much easier to memorise. Although the help screen is always available while using Amsword, searching for the right control sequence, however, slows you down a bit.

As with Easi-Amsword, the arrow keys are used to move the cursor around, and their actions are magnified by using them in combination with the (SHIFT) and (CTRL) keys. It is easy to move left and right by a character, word, or to the ends of the line and, similarly, up and down by a line, screenful or to the top or bottom of the document. Amsword treats the ends of each line as the left-hand and right-hand margins. This may seem logical enough, but in practice it is often useful to move to the end of the text on a given line, and this is more awkward to do.

When you enter Amsword, certain features are selected by default: word-wrap (the facility which prevents words being split at the ends of lines), right-hand justification, the overwriting of characters if you type on top of existing text and the text being left as one continuous document, without page breaks. These are sensible defaults, but any of them may be changed, and the revised version of the program saved back to cassette or disc. This is a very useful feature of Amsword, as it means you can keep separate copies of the word processor pre-set for different kinds of document.

There are many other features of the program which may be set up to personal preference. They include the page layout, the colours of the screen display and even the shape of the cursor. They are all controlled by selecting from menus and are easy to change.

Amsword's text manipulation is very versatile. Words may be inserted anywhere within the document, simply by positioning the cursor and pressing (CTRL)I. If the cursor is in the middle of a word, a space will be inserted so that a new character may be typed in. If the cursor lies on a space between two words, text to the right of the space will be moved onto the next line to make more room. When you have inserted the text, you will probably need to re-form the paragraph, particularly if it is justified. This can be done by pressing (CTRL)J. Amsword re-forms paragraphs quite slowly when compared with other word processors.

A block of text may be sectioned off using two markers, and this block may then be moved, deleted or copied to another place in the document. This allows you to shuffle paragraphs around within your text until you're happy with their order.

The current settings of the left and right hand margins, and the tabulation positions are shown by a 'ruler' at the bottom of the screen. Both margins and the tab settings may be freely altered, and when re-forming a paragraph the current margin settings will be used.

You can define both headers and footers within Amsword and define where within the spaces at top and bottom of each page they are to be printed. Page numbers may be printed at the top or bottom of each page, and at either side or in the middle. You can also start page numbering from any number, so that you can print a file which is a continuation of a previous document. If you do this, though, the second document will start on a new page. There is no easy way of printing several text files as one continuous document, unless all the files fit in memory together.

Amsword can handle documents up to about 14000 characters long. This represents about 2300 words or between three and four A4 pages. This is not a lot if you need to type reports or theses, but is probably enough for the majority of business or personal letters.

A feature often found in expensive word processors, and also found in Amsword, is 'Search and Replace'. This facility is very powerful, as it helps you to rectify consistent mistakes, and even allows you to use a form of shorthand within you documents.

You call the routine by pressing (CTRL)R, and you are then asked to enter the search word, and its replacement if required. Your document is searched for every occurence of the search word, and each one is replaced by the new word or phrase. If you are typing a document which includes the same word or phrase many times, then you can type a single letter when entering the text and replace it later with the word or phrase, using the search and replace option of Amsword.

One of the particularly interesting features of Amsword is its inclusion of a second character set, which may be called up at any time. This second set includes the Greek alphabet, sub-and superscripts, fractions and proof-marking symbols. These may be included in your ordinary text and freely mixed with characters from the normal set.

When it comes to printing text which includes these extra characters, you rely more heavily on the features of your printer. Many printers, including the DMP-1, offer some or all of these characters, and it's simply a question of getting Amsword to send the correct codes to your printer to print the desired character. Amsword allows for this by letting you redefine the codes sent by the computer to the printer. These definitions will also be saved with Amsword if you save a customised version of the program.

As well as the second character set, Amsword can also be customised to provide for the special facilities of your printer. These might include underlining, emphasising and special character fonts. Each facility is called within the printer by sending it a sequence of codes before and after the effect is used. These sequences can be set up within Amsword in the same way as the second character set, and are then called by using a (CTRL) sequence while typing in the text. This system has the advantage that if you change printers (or can afford more than one), you can keep versions of Amsword for each printer, and still use the same sequence of (CTRL) codes for each effect when entering text.

Amsword is a sophisticated beasty, and there's no doubt that it can satisfy most general needs. There are a couple of minor niggles, though, like the positioning of the cursor at various points in the program. For instance, if you leave the text display to print the document or alter some of the configuration options, the cursor will be repositioned at the start of the document, rather than remaining where you left it.

Although Amsword leaves the ten function keys for your use, it might have been easier if it had used them in their three states (alone, with (SHIFT) and with (CTRL)) instead of relying on rather obscure alphabetic sequences. The counter display within the program, which shows how much text space remains, is described as being 'usually an over-estimate'. You might wonder what use it is, if it's not accurate.

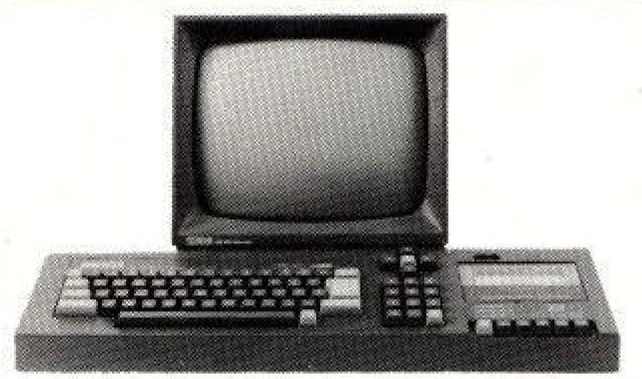
None of these points cause any major problems, though, and overall Amsword offers exceptional value for money and proves to be a word processor well up to the standards of others which cost much more. Without spending a lot more, on a CP/M-based word processor, Amsword offers the best word processing system available for the CPC464 and CPC664 micros.

Easi-Amsword: Cassette £9.95

Amsword: Cassette £16.95, Disc £23.95

ACU

TRANSFORM LTD. Amstrad



COMPUTER AND MONITOR

CPC 464 Computer. Cassette with Green Monitor . . 249.00
CPC 464 Computer Cassette with Colour Monitor. . 359.00
CPC 664 Computer. Disc with Green Monitor 339.00
CPC 664 Computer. Disc with Colour Monitor. 449.00

DISC DRIVE

3" Disc Drive with CP/M and Logo. 199.00
3" Disc Drive without Controller. 159.00

WORD PROCESSING

TASWORD 464
Wordprocessing program complete with full screen prompts and tutor. This program will allow you to produce letters, forms etc. fully compatible with all printers. Features include page numbering, search and find, search and replace, block copy and block move. The tutor will give full training on the use of the above functions.
SUPPLIED ON CASSETTE £19.95
SUPPLIED ON DISC £23.95

DATABASE

MASTERFILE 464
This database has set the standard for micro computers. With 100% machine code it will allow 240 characters per field, 40 fields per record and 34,000 characters per file. This will enable you to keep a record of 500 full names and addresses. Features include full search facilities, sort in ascending or descending order, column totals, 1 or 22 records per screen.
SUPPLIED ON CASSETTE £24.95
SUPPLIED ON DISC £29.95

SPREADSHEET

MASTERCALC
Spread sheet program from the same software house as Masterfile. Features include 3000 cells 8 bit floating precision, 40-80 column display, direct totals and sub-totals, 3 bar histograms, cursor direction keys, add or delete columns or rows and high resolution screen copies on Epson compatible printers.
SUPPLIED ON CASSETTE £24.95
SUPPLIED ON DISC £29.95
Note cassette versions can be used on disc.

PRINTERS · LEADS · DISCS

DOT MATRIX PRINTERS
BROTHER M1009 . . . . £187.45p
EPSON RX80 FT £263.35p
EPSON FX80 . . . . £372.60p
NATIONAL PANASONIC KX-P1091 . . £287.50p
TAXAN KAGA KP810 . . . . £322.00p

DAISYWHEEL PRINTERS
SMITH CORONA TP1 . . . . £217.35p
BROTHER HR15 . . . . £401.86p

ACCESSORIES
CENTRONICS LEAD £9.95p
3" DISCS £4.95p
MODULATOR £19.95p

All prices include VAT. Please add £5.75p for delivery of printer or computer. If you are ordering a printer and computer delivery is free.

TRANSFORM LTD (Dept. SU) 01-658 6350
24, West Oak, Beckenham, Kent BR3 2EZ

VISA

AMSTRAD DISKS - BEAT THIS !!

£4.25 each £3.99 ea. in 10s

PROGRAMMERS TOOLKIT

* REMSTRIP removes REM statements to generate more working space when progam development is done. You can limit this to a range of line numbers.
* CROSS REFERENCE all variables or your own list of names -very useful for debugging or developing new program modules.
* SEARCH & REPLACE under your total control - options include range of line numbers, ask before replacing, GLOBAL replace, search only. Works with any string up to 255 characters.
* NICE LIST produces formatted listings with each statement on a new line, indents loops etc. A must for serious and beginning programers.
* FAST operation - written in compiled pascal.

DISK ONLY FULL MANUAL INCLUDED £12.95

ALL PRICES INCLUDE VAT and POSTAGE. NO EXTRAS

Access & Barclaycard Telephone orders welcome

Saxon Computing

3 St. Catherines Drive, Leconfield, Beverley, North HumbersideHU17 7NT, Tel: (0401 50697

BUDGET BUSINESS SOFTWARE

ON CASSETTE

- STOCK CONTROL
- PURCHASE & SALES LEDGER
- MAILER
- SPREADSHEET/FORECASTER
- NON VAT ACCOUNTS
- PAYROLL

} £3.99 each

COMPLETE ALBUM OF 6 @ £15.00

10 PACK OF 3" BRANDED DISCS £36.00

All items include VAT& P&P

Send Cheques/P.O's to: BUDGET DISCS
76 TEMPLE RD, BOLTON LANCS BL1 3LT
V.Rae Reaves (0204) 40010

NEW

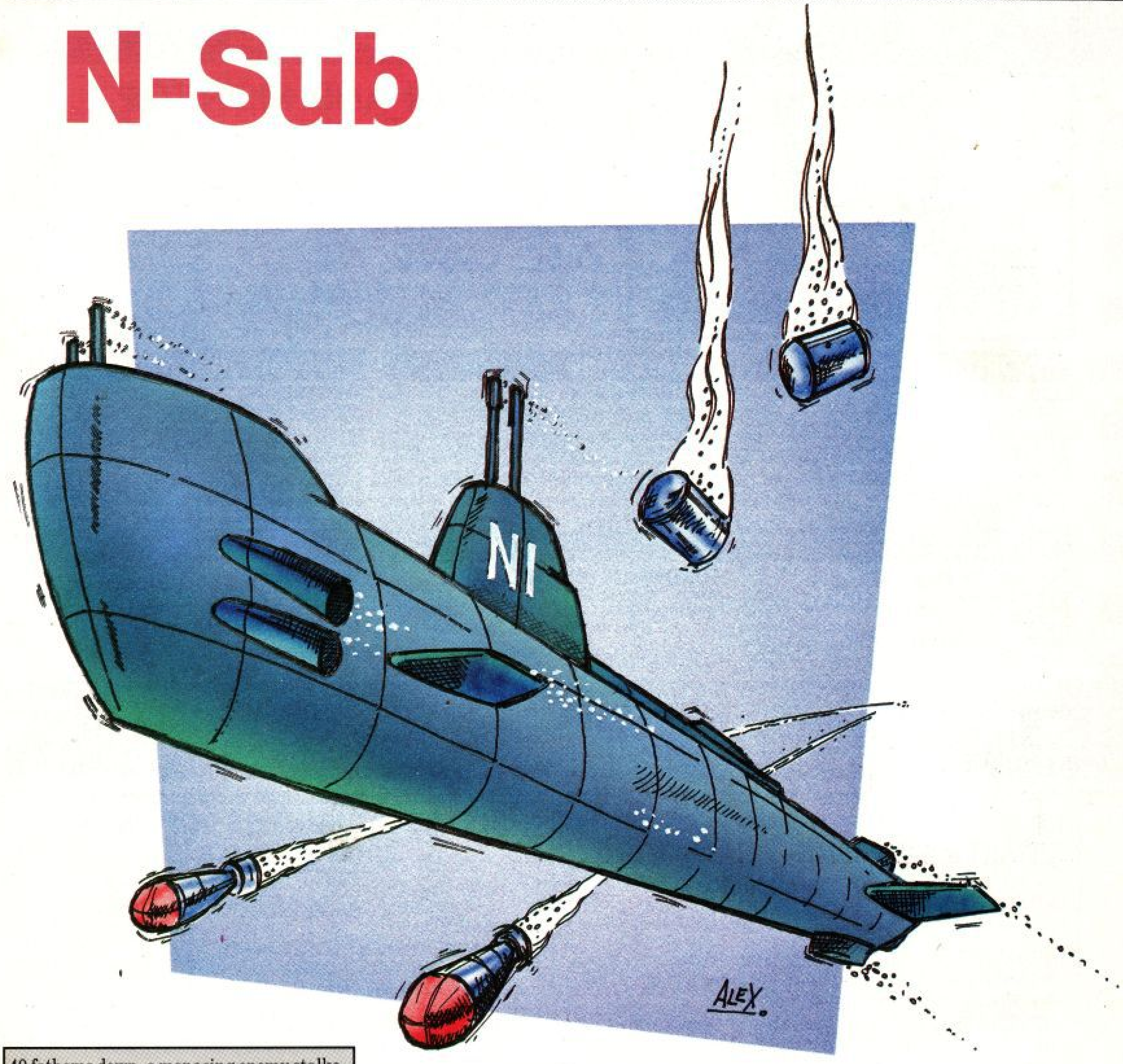
Only £45.00 inc.

SERIAL (RS232) INTERFACE

* All speeds (including non-standard speeds) are software -programmable.
* Split speed operation possible.
* All normal interface functions available (DTR,RTS,CTS,Etc.)
* Connection via standard 25 way D socket.
* Through connection of interface Bus allows stacking of other Add-ons.
* Complete with software for 300 baud and Prestel.(RTTY software available £5.00 extra.)

Mail order only to:-
J.P.H. Electronics, 26 Highfields, Earley, Reading RG6 2RZ
Telephone orders/enquiries to:-
0734 303535
Cash with order, Barclaycard or Access.

N-Sub



40 fathoms down, a menacing enemy stalks. Davy Jones' locker, or the Victoria Cross? The choice is yours. Type in this listing and voyage to the bottom of the sea

The program is menu-driven and has the following features; one or two player games, player list, top twenty hall of fame, Naval ranking system with automatic promotion and relegation, demonstration mode, sound effects and comprehensive instructions.

Left to itself the computer follows a set pattern of menu options:-pressing any key returns to the main menu.

Details of the game are given in the instructions, but basically, you are in control of a nuclear submarine with which you must attempt to destroy as many of the enemy fleet as possible, whilst avoiding hazards such as depth-charges, enemy subs, homing-bombs etc.

There are two screen types; the 'fleet' and the 'destroyers', but each wave of the destroyers brings a new hazard. (SEE BELOW)

1-99 Define graphics characters & set up variables
500-520 Menu control
550-564 Initialise game for 1 or 2 players
570-573 Automatic menu selection
650-668 Add new player to list
700-710 List players & their ranks
750-760 Initialise demonstration
850-855 Print list of rankings

900-925 Print score values
950-955 Initialise game inks
1000-1040 draw screen
1050-1210 Initialise new game variables
1500-1740 Main game loop
1800-1860 Move mtb & drop depth charges
2000-2045 Test joystick input and move sub/fire
2200-2207 Initialise upward missile
2300-2310 Initialise horizontal missile
2900-2960 Move fleet
3065-3070 Drop depth charges
3500-3810 Move destroyers
4000-4070 Move upward missile when below water-line

SCREEN NUMBER	SHIP TYPE	SCORE VALUE	NO.OF ENEMY SHIPS	SCORE VALUE	SUB FIRING	MTB	H-BOMB	S-BOMB	D-CHARGE EXPLOSION	OTHER EXPLOSIONS
1	FLEET	50,100,150	1	100	DO NOT FIRE	★			SMALL	SMALL
2	DESTROYER	100	1	100	DO NOT FIRE				SMALL	SMALL
3	FLEET	50,100,150	2	150	UP TO 8 PIXELS VERTICALLY	★			SMALL	SMALL
4	DESTROYER	150	2	150	UP TO 8 PIXELS				SMALL	SMALL
5	FLEET	100,150,200	3	200	UP TO 16 PIXELS	★	★		SMALL	SMALL
6	DESTROYER	200	3	200	16 PIXELS				SMALL	SMALL
7	FLEET	100,150,200	4	250	24 PIXELS	★	★	★	SMALL	SMALL
8	DESTROYER	250	4	250	24 PIXELS				SMALL	SMALL
9	FLEET	100,200,250	5	300	32 PIXELS	★	★	★	LARGE	SMALL
10	DESTROYER	300	5	300	32 PIXELS				LARGE	SMALL
11	FLEET	100,200,250	6	350	40 PIXELS	★	★	★	LARGE	LARGE
12	DESTROYER	350	6	350	40 PIXELS				LARGE	LARGE

4100-4142 Test upward missile hit (below water-line)
4200-4280 Upward missile hit ship
4300 MTB dnd
4400-4430 MTB destroyed
4500-4550 Move upward missile (above water line)
4600-4622 Test horizontal missile hit
5000-5030 Move depth charges
6000-6020 Print score etc
6500-6510 Initialise enemy subs
6600 Initialise homing bomb
6650 Initialise straight bomb
6700-6750 Move homing bomb
6800-6810 Move straight bomb
7000-7050 Move enemy subs
7060-7072 Fire lasers (enemy subs)
7900-7910 enemy sub removal

9000-9005 Break in. note: esc can be used as pause button if pressed once; any key resumes.
9500-9510 Error found
9600-9610 Print "n-sub"
9700-9710 Print ranking list
10000-10040 Small depth charge explosion
10100-10125 Large depth charge explosion
10500-10510 Rub out explosions
11000-11030 Your sub blown up
12000 Game over
12010-12025 Add score(s) to hall of fame

12500-12555 Print high score table
12600-12640 Promotion & relegation
13000-13035 Fleet screen cleared
13165-13170 Initialise ship positions
14000-14010 Destroyer screen cleared
15000- Instructions

CONTROLS

N-sub was designed for joystick control, but it can be played using keyboard if the following alterations are made:

EDIT 1500› 1500 IF INKEY $‹› "" AND Z1‹50 THEN GOSUB 2050 ELSE...

NEW LINE› 2033 IF INKEY (47) = 0 THEN 2300

NEW LINE› 2034 IF INKEY (18) = 0 THEN 2200

In which case the controls become:-

Q	W	E	FIRE	SPACE
A		D	FIRE	ENTER (LARGE)
Z	X	C		

but a and w will produce diagonal motion etc. (large)

Listing 1

```
10 BORDER 20:INK 0,20:INK 2,20:INK 1,6:I
   NK 3,15
20 MODE 1:LOCATE 1,1:PEN 2:PRINT"N-SUB":
   PEN 1
30 FOR F=400 TO 384 STEP-2
40 FOR G=0 TO 80 STEP 2
50 C=TEST(G,F)
60 IF C THEN LOCATE 1+G/2,(402-F)/2:PRIN
   T CHR$(143)
70 NEXT G,F
80 PEN 2:LOCATE 1,1:PRINT "IS LOADING"
90 PEN 3
100 FOR F=400 TO 384 STEP-2
110 FOR G=0 TO 160 STEP 2
120 C=TEST(G,F)
130 IF C=0 THEN 150
140 PLOT 160+G*2,192-2*(400-F),3:PLOT 16
    0+G*2,190-2*(400-F):PLOT 160+G*2+2,1
    92-2*(400-F):PLOT 160+G*2+2,190-2*(4
    00-F)
150 NEXT G,F:LOCATE 1,1:PEN 0:PRINT"
          ":INK 2,0
160 LOCATE 11,11:PEN 2:PRINT CHR$(164);"
     1984  STEPHEN GRAY"
170 PEN 1:LOCATE 1,18:RUN "sub"
```

Listing 2

```
1 DIM L(5,2),SS(4,2),RK(20),RK$(20),HC(2
  0),HC$(20)
2 EE(0)=650:EE(1)=-100:DEG:RANDOMIZE TIM
  E
```

```
3 ENV 1,1,0,20,15,-1,3:ENV 2,1,0,20,10,-
  1,4:ENV 3,5,1,2,1,-6,1,1,0,4
4 ENT 1,12,-2,1:ENT 2,18,-10,2,10,0,15:E
  NT 4,20,5,1
5 ON ERROR GOTO 9500
6 ON BREAK GOSUB 9000
10 SYMBOL AFTER 128
20 SYMBOL 129,1,1,127,213,255,255,255,12
   7
30 SYMBOL 130,224,224,255,255,255,254,24
   8,224
40 SYMBOL 131,1,3,255,255,131,1,0,0
41 SYMBOL 132,128,192,255,255,193,128,0,
   0
42 SYMBOL 133,7,7,255,255,255,127,31,7
43 SYMBOL 134,128,128,254,171,255,255,25
   5,254
44 SYMBOL 135,7,7,127,215,255,255,255,12
   4
45 SYMBOL 136,1,3,255,255,243,193,0,0
46 SYMBOL 137,128,192,255,255,207,131,0,
   0
```

```
47 SYMBOL 138,224,224,254,235,255,255,25
   5,62
49 SYMBOL 140,18,82,116,24,208,48,16,16
50 SYMBOL 141,195,231,126,36,126,255,189
   ,189
51 SYMBOL 142,177,253,241,253,241,255,12
   6,60
52 SYMBOL 143,141,191,143,191,143,255,12
   6,60
53 SYMBOL 144,0,0,0,0,48,24,24,12
54 SYMBOL 145,0,0,0,0,12,24,24,48
```

```
55 SYMBOL 146,24,24,24,24,60,60,36,36
56 SYMBOL 147,0,0,224,124,124,224,0,0
57 SYMBOL 148,0,0,7,62,62,7,0,0
60 SYMBOL 151,255,46,194,224,0,128,192,2
   24
61 SYMBOL 152,59,22,6,0,0,0,0,0
62 SYMBOL 153,127,95,63,31,15,31,63,127
63 SYMBOL 154,255,255,255,239,39,135,3,1
   35
64 SYMBOL 155,231,231,231,231,195,195,21
   9,219
65 SYMBOL 156,255,255,255,255,255,255,25
   5,255
66 SYMBOL 157,33,153,77,39,31,31,127,63
67 SYMBOL 158,32,35,100,216,240,240,255,
   252
68 SYMBOL 159,31,127,143,31,55,101,69,13
   6
69 SYMBOL 160,248,240,252,230,33,176,152
   ,136
```

```
70 SYMBOL 161,36,84,85,215,223,239,255,2
   55
71 SYMBOL 162,255,255,255,223,215,85,84,
   36
72 SYMBOL 163,0,48,50,254,254,250,112,0
73 SYMBOL 164,0,0,32,22,255,63,15,3
74 SYMBOL 165,0,0,8,60,124,255,255,254
75 SYMBOL 166,0,0,16,60,62,255,255,127
76 SYMBOL 167,0,0,4,104,255,252,240,192
77 SYMBOL 168,247,231,247,183,198,229,99
   ,35
78 SYMBOL 169,128,195,0,0,129,129,195,19
   5
80 DATA 0,200,400,700,1200,1600,2000,300
   0,4000,5000,7000,10000,12500,15000,17
   500,20000,25000,30000,40000,50000
```

```
81 DATA "LANDLUBBER","ORDINARY SEAMAN","
   ABLE SEAMAN","LEADING SEAMAN","PETTY
   OFFICER","CHIEF PETTY OFFICER","WARRA
   NT OFFICER","MIDSHIPMAN","ENSIGN (GRA
   DE II)"
82 DATA "ENSIGN (GRADE I)","LIEUTENANT (
   2ND CLASS)","LIEUTENANT (1ST CLASS)"
83 DATA "LIEUTENANT COMMANDER","CAPTAIN"
   ,"COMMODORE","REAR ADMIRAL (LOWER)"
84 DATA "REAR ADMIRAL (UPPER)","VICE-ADM
   IRAL","ADMIRAL","FLEET ADMIRAL"
85 FOR F=1 TO 20:READ RK(F):NEXT F:FOR F
   =1 TO 20:READ RK$(F):NEXT F
90 DATA "1. <1> PLAYER GAME"
91 DATA "2. <2> PLAYER GAME"
92 DATA "3. ADD NEW PLAYER"
93 DATA "4. VIEW PLAYERS"
94 DATA "5. HIGH SCORE TABLE"
95 DATA "6. DEMONSTRATION"
96 DATA "7. RANKINGS"
97 DATA "8. SCORE VALUES","9. INSTRUCTIO
   NS"
```

```
98 HC$="00000":C=1
99 C(1)=14:C(2)=17:C(3)=18:C(4)=20:C(5)=
   23:C(6)=5
500 Z1=0:SPEED KEY 20,3:Z=40:BORDER 0:BL
    $=CHR$(156):MODE 0:INK 0,0:INK 1,INT
    (RND*16)+10:PAPER 0:PEN 1:GOSUB 9600
501 PL=1:NS(1)=3:NS(2)=3:SC(1)=0:SC(2)=0
    :SR(1)=1:SR(2)=1:DD=0
502 INK 2,INT(RND*16)+10:PEN 2:RESTORE 9
    0:FOR F=1 TO 9:LOCATE 1,6+F*2:READ F
    $:PRINT F$:NEXT F
503 SC$(1)="00000":SC$(2)="00000"
504 L(0,1)=1:L(1,1)=0.15:L(2,1)=3:L(3,1)
    =0.986:L(4,1)=0.95:L(5,1)=0:HF=L(2,P
    L)
505 L(0,2)=1:L(1,2)=0.15:L(2,2)=3:L(3,2)
    =0.986:L(4,2)=0.95:L(5,2)=0
506 SS(1,2)=100:SS(2,2)=0:SS(3,2)=100:SS
    (4,2)=150
507 SS(1,1)=100:SS(2,1)=0:SS(3,1)=100:SS
    (4,1)=150
508 L(0,1)=1:L(0,2)=1
510 FOR F=1 TO 3000:V=VAL(INKEY$):IF V=0
    OR V>9 THEN NEXT F:GOTO 570
515 ON V GOSUB 550,550,650,700,12500,750
    ,850,900,15000
517 IF V<3 AND TP THEN 940
520 GOTO 500
```

```
550 IF TP=0 THEN RETURN
555 GOSUB 700:PEN 2:LOCATE 1,23:INPUT "W
    HO'S PLAYER <1>";N:IF N=0 OR N>TP TH
    EN 555
560 P1(1)=N:RN(1)=PR(N):N$(1)=NP$(N):AV(
    1)=PV(N):IF V=1 THEN NP=1:NS(2)=0:RE
    TURN
562 PEN 1:LOCATE 1,24:INPUT "AND WHO'S P
    LAYER <2>";N:IF N=0 OR N>TP THEN 562
564 P1(2)=N:RN(2)=PR(N):N$(2)=NP$(N):AV(
    2)=PV(N):NP=2:RETURN
570 GOSUB 900:IF I$<>"" THEN 500
571 GOSUB 700:IF I$<>"" THEN 500
572 GOSUB 750:IF I$<>"" THEN 500
573 Z=40:GOTO 12500
650 INK 3,6:MODE 1:INK 1,10+INT(RND*16):
    INK 2,10+INT(RND*16):GOSUB 9700:TP=T
    P+1
660 LOCATE 1,23:PEN 1:PRINT"PLAYER";TP;"
    ENTER YOUR NAME";:PEN 3:INPUT N$:NP$
    (TP)=RIGHT$(N$,7)
665 LOCATE 1,24:PEN 1:PRINT"AND YOUR RAN
    K (1-20) ";:PEN 3:INPUT PR(TP):IF PR
    (TP)>20 OR PR(TP)=0 THEN 665
```

```
667 PV(TP)=11*RK(PR(TP))/10:GOSUB 700
668 RETURN
700 IF TP=0 THEN RETURN
701 MODE 1:TAGOFF:FOR F=1 TO TP:PEN 1:LO
    CATE 1,1+F
702 PRINT F:PEN 2:LOCATE 6,1+F:PRINT NP$
    (F):LOCATE 17,1+F:PEN 3:PRINT RK$(PR
    (F)):NEXT F
703 IF V=1 OR V=2 THEN RETURN
705 FOR F=1 TO 3000:I$=INKEY$:IF I$="" T
    HEN NEXT F
710 RETURN
```

```
750 Z1=50:GOSUB 950:GOSUB 1500
760 RETURN
850 MODE 1:GOSUB 9700:FOR F=1 TO 7000:IF
     INKEY$="" THEN NEXT F
855 RETURN
900 GOSUB 1100:INK 0,0:INK 1,INT(RND*16)
    +10:INK 2,23:INK 3,6:INK 4,18:INK 5,
    26
902 PAPER 0:BORDER 0:MODE 0:PEN 1:PAPER
    0:GOSUB 9600
904 PEN 2:FOR F=1 TO 10:LOCATE 5,7+F:PRI
    NT STRING$(5,BL$):NEXT F
906 LOCATE 6,9:PRINT SH$(1):LOCATE 13,9:
    PEN 5:PRINT "150"
908 PEN 2:LOCATE 6,11:PRINT SH$(2):LOCAT
    E 13,11:PEN 5:PRINT "100"
910 PEN 2:LOCATE 6,13:PRINT SH$(3):LOCAT
    E 13,13:PEN 5:PRINT " 50"
912 PEN 2:LOCATE 6,15:PRINT DD$:LOCATE 6
    ,16:PRINT DE$:LOCATE 13,15:PEN 5:PRI
    NT"100"
914 LOCATE 6,19:PEN 3:PRINT ES$(0):LOCAT
    E 13,19:PEN 5:PRINT"100"
916 LOCATE 6,21:PEN 4:PRINT MB$(1):LOCAT
    E 10,21:PEN 3:PRINT"MYSTERY"
918 LOCATE 6,23:PEN 4:PRINT HB$:LOCATE 6
    ,24:PRINT HL$(0):LOCATE 10,23:PEN 3:
    PRINT"MYSTERY"
920 FOR F=1 TO 3000:I$=INKEY$:IF I$="" T
    HEN NEXT F
925 RETURN
```

```
940 Z=0:GOSUB 950:GOTO 1500
950 DATA 0,20,6,9,4,18,15,26,24,25,23,11
    ,14,17,15,19
955 RESTORE 950:FOR f=0 TO 15:READ A:INK
     F,A:NEXT F
1000 MODE 0:PAPER 0:CLG 0:BORDER 13:TAGO
     FF
1003 NS$=CHR$(163)+CHR$(163)+CHR$(163)+C
     HR$(163)
1005 PAPER 10:PRINT SPACE$(60);
1010 PAPER 11:PRINT SPACE$(160)
1013 IF NP=2 THEN PL=3-PL:GOSUB 6000:GOS
     UB 6020:PL=3-PL:GOSUB 6000:GOSUB 60
     20 ELSE GOSUB 6000:GOSUB 6020
1015 FOR X=0 TO 640 STEP 8:PLOT X,222,11
     :NEXT X
1025 PLOT 0,0,3:FOR F=1 TO 15:X=RND*620+
     10:Y=RND*8
1026 FOR G=1 TO Y:MOVE X,7+G:TAG:PRINT C
     HR$(140);:NEXT G,F
1030 FOR X=0 TO 640 STEP 4:Y=RND*4:MOVE
     X,0:DRAW X,Y,8:NEXT X
1033 IF Z1=50 THEN PEN 8:PAPER 0:TAGOFF:
     LOCATE 4,18:PRINT"DEMONSTRATION":GO
     TO 1040
1035 PEN 8:PAPER 0:TAGOFF:LOCATE 3,18:PR
     INT "PLAY PLAYER  ";PL:LOCATE 16,18
     :PRINT"<":LOCATE 18,18:PRINT ">"
1040 FOR F=1 TO 640 STEP 2:PLOT F,228+RN
     D*120,INT(6*RND+10):NEXT F
1050 FF=0:SO=0:MB=0:HB=0:SB=0:EN=0:NS=12
```

```
1100 SU$(0)=CHR$(129)+CHR$(130)+CHR$(131
     ):SU$(1)=CHR$(132)+CHR$(133)+CHR$(1
     34)
1101 SB$=CHR$(252)
1102 MB$(0)=CHR$(164)+CHR$(165):MB$(1)=C
     HR$(166)+CHR$(167)
1110 ES$(0)=CHR$(135)+CHR$(136):ES$(2)=C
     HR$(137)+CHR$(138)
1125 HB$=CHR$(141):HL$(0)=CHR$(143):HL$(
     2)=CHR$(142)
1135 DC$(1)=CHR$(144):DC$(0)=CHR$(145)
1138 E9$=CHR$(159)+CHR$(162)+CHR$(160)
1140 MU$=CHR$(146):MI$(0)=CHR$(148):MI$(
     1)=CHR$(147)
1142 M1$=CHR$(155)
1150 SH$(3)=CHR$(151)+CHR$(152)+CHR$(153
     ):SH$(2)=CHR$(151)+CHR$(153):SH$(1)
     =CHR$(154)
1151 BL$(3)=BL$+BL$+BL$:BL$(2)=BL$+BL$:B
     L$(1)=BL$(2)
1158 EX$(1)=CHR$(161):EX$(2)=CHR$(157)+C
     HR$(158):EX$(3)=CHR$(157)+CHR$(161)
     +CHR$(158)
1159 B1$=CHR$(161)+CHR$(161)+CHR$(161):B
     3$=CHR$(159)+CHR$(162)+CHR$(160)
1160 DD$=CHR$(168)+BL$:DE$=CHR$(169)+BL$
1165 GOSUB 13165
1170 E1$=CHR$(157)+CHR$(158):E2$=CHR$(15
     9)+CHR$(160)
1195 LOCATE 3,18:PRINT "
     ":TAG
1200 SX=280:SY=92:PLOT SX,SY,1:TAG:PRINT
      SU$(LR);
1210 SPEED KEY 2,3:RETURN
1500 IF JOY(0) THEN GOSUB 2000 ELSE IF Z
     1>49 THEN J$=BIN$(INT(32*RND),5):IF
      INKEY$="" AND Z1=50 THEN GOSUB 200
     5 ELSE IF Z1<70 THEN Z1=0:RETURN EL
     SE 12000
```

```
1510 GOSUB 2900
1520 IF FF THEN GOSUB 4000
1530 IF ND THEN GOSUB 5000
1535 IF HB THEN GOSUB 6700
1537 IF SB THEN GOSUB 6800
1540 IF RND>L(3,PL) AND EN=0 THEN GOSUB
     6500
1545 IF RND>L(3,PL)+0.009 AND MB=0 AND D
     D=0 THEN MD=2*(INT(RND*2)-0.5):MX=1
     0-9*MD:MY=9:MB=1:TAGOFF:GOSUB 1850
1550 IF EN THEN GOSUB 7000
1555 IF FF THEN GOSUB 4000
1560 IF SR(PL)>4 AND DD=0 AND RND>L(3,PL
     ) AND HB=0 THEN GOSUB 6600 ELSE IF
     RND>L(3,PL) AND SR(PL)>6 AND DD=0 A
     ND SB=0 THEN GOSUB 6650
1570 IF MB THEN GOSUB 1800
1690 INK INT(4*RND+12),C(1+INT(6*RND))
1700 IF EN OR MB OR HB THEN 1500
1730 X=RND*640:Y=228+RND*120:IF TEST(X,Y
     ) THEN PLOT X,Y,INT(6*RND+10)
1740 GOTO 1500
1800 C=C*2+7*(C=4):SOUND C,220,50,10,0,2
     :TAGOFF:LOCATE MX,MY:PAPER 11:PRINT
      "  ":MX=MX+MD:IF MX>19 OR MX<1 THE
     N MB=0:TAG:RETURN
1850 PRINT CHR$(22)+CHR$(1):LOCATE MX,MY
     :PEN 5:PRINT MB$(MD/2+0.5):PRINT CH
     R$(22)+CHR$(0):TAG:IF RND>0.2 OR ND
     >9 THEN RETURN
1860 ND=ND+1:DX(ND)=MX/20*640-RND*32:DY(
     ND)=220:GOTO 3067
2000 J$=BIN$(JOY(0),5)
2005 IF MID$(J$,2,1)="1" AND SX<540 THEN
      XA=12:LR=1:GOTO 2010 ELSE XA=0
2007 IF MID$(J$,3,1)="1" AND SX>12 THEN
     XA=-12:LR=0 ELSE XA=0
```

```
2010 IF RIGHT$(J$,1)="1" AND SY<214 THEN
      YA=6:GOTO 2030 ELSE YA=0
2015 IF MID$(J$,4,1)="1" AND SY>22 THEN
     YA=-6 ELSE YA=0
2030 PLOT SX,SY,0:PRINT "   ";:SX=SX+XA:
     SY=SY+YA:PLOT SX+44,SY-6,1:MOVE SX,
     SY:PRINT SU$(LR);
2035 IF JOY(0)=16 OR (JOY(0)>15 AND RIGH
     T$(J$,1)="1") THEN 2200
2040 IF LEFT$(J$,1)="1" THEN 2300
2045 RETURN
2050 IF Z1<50 THEN 2055 ELSE IF Z1<70 TH
     EN Z1=0:RETURN ELSE 12000
2055 IF (INKEY(58)+INKEY(61)+INKEY(62))>
     -3 AND SX<540 THEN XA=12:LR=1:GOTO
     2060 ELSE XA=0
2057 IF (INKEY(67)+INKEY(69)+INKEY(71))
     >-3 AND SX>12 THEN XA=-12:LR=0 ELSE
      XA=0
2060 IF (INKEY(67)+INKEY(59)+INKEY(58))>
     -3 AND SY<214 THEN YA=6:GOTO 2030 E
     LSE YA=0
```

```
2065 IF (INKEY(71)+INKEY(63)+INKEY(62))
     >-3 AND SY>22 THEN YA=-6 ELSE YA=0
2070 GOTO 2030
2200 IF FF=1 THEN RETURN
2201 C=C*2+7*(C=4):SOUND C,30,10,6,0,1,1
2205 FF=1:BX=SX+22+LR*24:BY=SY+16:IF BY<
     216 THEN BS=0:PLOT BX+16,BY,7:MOVE
     BX,BY:PRINT MU$;:RETURN
2207 BS=1:BY=240:GOTO 4550
2300 IF FF=1 THEN RETURN
2301 C=C*2+7*(C=4):SOUND C,25,10,6,0,1,1
2305 FF=1:BX=SX-32+128*LR:BY=SY:BS=-2+LR
     :IF TEST(BX-16+192*LR,BY-8)<>0 THEN
      4600
2310 PLOT -2,0,7:MOVE BX,BY:PRINT MI$(BS
     +2);:RETURN
2900 IF DD THEN 3500
2902 SM=SM+1+3*(SM=3)
2903 IF XC(SM)<-400 THEN 13000
2905 XC(SM)=XC(SM)-HF:CL=11+(SM=1)
2910 PLOT XC(SM),YC(SM),CL:PRINT SL$(SM)
     ;
2960 IF RND>L(1,PL) OR ND>3 THEN RETURN
3065 ND=ND+1:DX(ND)=XC(1)+FS*96+(630-(XC
     (1)+FS*96))*RND:DY(ND)=220:IF DX(ND
     )>630 THEN ND=ND-1:RETURN
3067 IF DX(ND)-SX<96 AND ABS(DY(ND)-SY)<
     16 AND DX(ND)-SX>-32 THEN 10000
```

```
3070 PLOT DX(ND)+16,DY(ND)-8,6:MOVE DX(N
     D),DY(ND):WD(ND)=INT(2*RND):PRINT D
     C$(WD(ND));:RETURN
3500 SM=SM+1:IF SM>NS THEN SM=1
3510 ON GE(SM) GOTO 3600,3700,3800
3600 IF PX(SM)<320 THEN GE(SM)=2:AG(SM)=
     98:GOTO 3710
3610 PX(SM)=PX(SM)-16:PLOT PX(SM),PY(SM)
     ,11:PRINT DD$;:PLOT PX(SM),PY(SM)-1
     6:PRINT DE$;
3620 IF RND>L(1,PL) OR ND>3 THEN RETURN
3630 ND=ND+1:DX(ND)=PX(SM)-16+32*RND:DY(
     ND)=220:IF DX(ND)>630 THEN ND=ND-1:
     RETURN
3640 GOTO 3067
3700 IF AG(SM)>=810 THEN GE(SM)=3:GOTO 3
     810
3710 PLOT PX(SM),PY(SM),11:PRINT BL$;:PL
     OT PX(SM),PY(SM)-16:PRINT BL$;
3720 AG(SM)=AG(SM)+8:PX(SM)=320+96*COS(A
     G(SM)):PY(SM)=304+46*SIN(AG(SM)):PL
     OT PX(SM),PY(SM):PRINT DD$;:PLOT PX
     (SM),PY(SM)-16:PRINT DE$;:GOTO 3065
3800 IF PX(SM)<-32 THEN F=SM:GOTO 4280
3810 GOTO 3610
```

```
4000 IF BS=1 THEN 4500
4005 IF BS<0 THEN 4050
4010 PLOT BX,BY,0:PRINT " ";:BY=BY+16:IF
      BY>210 THEN BS=1:BY=240:GOTO 4550
4020 IF TEST(BX+16,BY+2)>0 OR TEST(BX+16
     ,BY+10)>0 THEN 4100
4030 PLOT BX+16,BY,7:MOVE BX,BY:PRINT MU
     $;:RETURN
4050 PLOT BX,BY,0:PRINT " ";:BX=BX+64*(B
     S+1.5):IF BX>640 OR BX<-32 THEN FF=
     0:RETURN
4060 IF TEST(BX-32+64*(BS+2),BY-8)>0 OR
     TEST(BX-48+96*(BS+2),BY-8)>0 THEN 4
     600
4070 PLOT -2,0,7:MOVE BX,BY:PRINT MI$(BS
     +2);:RETURN
4100 T=TEST(BX+16,BY+2):IF T=0 THEN T=TE
     ST(BX+16,BY+10)
4101 IF T=2 THEN C=C*2+7*(C=4):SOUND C,0
     ,60,15,1,0,9:GOTO 4120
4102 IF T=6 THEN C=C*2+7*(C=4):SOUND C,4
     00,5,15,0,0,1:GOTO 4140
4105 C=C*2+7*(C=4):SOUND C,0,60,15,1,0,9
     :X=1+20*(HX-32)/640:Y=2+25*(1-(HY-3
     2*(HY<64))/400):Z=0:XE=HX:YE=HY:HB=
     0:GOSUB 10510:GOSUB 4400:RETURN
4120 FOR F=1 TO EN: IF BX-NX(F)<96 AND B
     X>NX(F)-20 AND ABS(NY(F)-BY)<26 THE
     N 4122
4121 NEXT F:LN=4121:GOTO 9000
4122 X=NX(F):Y=NY(F):PLOT -2,0,9:MOVE X,
     Y:PRINT EX$(2);:SC(PL)=SC(PL)+SS(3,
     PL):GOSUB 6000:SW=F:GOSUB 7900
4123 FF=0:PLOT X,Y,0:PRINT "  ";:RETURN
4140 FOR F=1 TO ND:IF ABS(BX-DX(F))<17 A
     ND ABS(DY(F)-BY)<32 THEN 4142
4141 NEXT F:LN=4141:GOTO 9000
```

```
4142 PLOT DX(F),DY(F):PRINT " ";:DX(F)=D
     X(ND):DY(F)=DY(ND):ND=ND-1:FF=0:RET
     URN
4200 HF=HF+0.4:SOUND 1,0,60,15,1,0,9:IF
     DD THEN 4250
4201 IF BY<272 THEN 4300
4202 IF BY<304 THEN SH=3:GOTO 4220
4205 IF BY<336 THEN SH=2:GOTO 4220
4210 SH=1
4220 FOR F=0 TO 3:IF BX>XC(SH)+76+F*96 T
     HEN NEXT F:GOTO 9000
4225 XE=XC(SH)+F*96:YE=YC(SH):IF NS=1 TH
     EN X=20*XE/640:Y=1+25*(1-YE/400):Z=
     11+(SH=1):GOSUB 4400:GOTO 13000
4228 PLOT XE,YE,2:PRINT EX$(SH);:A=SIN(1
     4)↑COS(20)
4230 IF SH>1 THEN PLOT XE,YE,11 ELSE PLO
     T XE,YE,10:FS=F+1
4232 PRINT BL$(SH);:SC(PL)=SC(PL)+SS(2,P
     L)+50*(4-SH):GOSUB 6000
4240 FF=0:NS=NS-1
4245 SL$(SH)=LEFT$(SL$(SH),F*3)+BL$(3)+R
     IGHT$(SL$(SH),9-F*3):RETURN
4250 FOR F=1 TO NS:IF ABS(BX-PX(F))>40 O
     R ABS(BY-PY(F))>49 THEN NEXT F:LN=4
     250:GOTO 9000
4255 XE=PX(F):YE=PY(F):IF NS=1 THEN X=20
     *XE/640:Y=2+INT(25*(1-YE/400)):Z=11
     +(Y<5):GOSUB 4400:GOTO 14000
4260 PLOT XE,YE,2:PRINT EX$(1);:PLOT XE,
     YE-16:PRINT BL$;
4265 A=SIN(14)↑COS(20):SC(PL)=SC(PL)+SS(
     1,PL):PLOT XE,YE,11:PRINT BL$;:PLOT
      XE,YE-16:PRINT BL$;:FF=0:GOSUB 600
     0
4280 PX(F)=PX(NS):PY(F)=PY(NS):GE(F)=GE(
     NS):AG(F)=AG(NS):NS=NS-1:IF NS=0 TH
     EN 14000 ELSE RETURN
```

```
4300 TAGOFF:LOCATE MX,MY:PAPER 11:PRINT
     "  ":X=MX:Y=MY:Z=11:GOSUB 4400:MB=0
     :RETURN
4400 HF=HF+0.3:SOUND 2,48,-10,10,3:BN=SS
     (4,PL)+50*INT(RND*9):IF BN>950 THEN
      BN=950
4405 FF=0:IF X>18 THEN X=18
4406 IF X<1 THEN X=1
4410 TAGOFF:B2$=RIGHT$(STR$(BN),3):PRINT
      CHR$(22)+CHR$(1):LOCATE X,Y-1:PEN
     2:PRINT B1$:LOCATE X,Y:PRINT BL$(3)
     :LOCATE X,Y:PEN 0:PRINT B2$:LOCATE
     X,Y+1:PEN 2:PRINT B3$
4415 FOR F=1 TO 70:NEXT F:SC(PL)=SC(PL)+
     BN
4420 LOCATE X,Y-1:PEN Z:PRINT BL$(3):LOC
     ATE X,Y:PEN Z+(Z=10)*(ROUND(Y)>3):P
     RINT BL$(3):LOCATE X,Y+1:PEN Z-(Z=1
     0):PRINT BL$(3):PRINT CHR$(22)+CHR$
     (0)
4425 GOSUB 6000:GOSUB 6020:IF NP>1 THEN
     PL=3-PL:GOSUB 6000:GOSUB 6020:PL=3-
     PL:RETURN
4426 RETURN
4430 TAGOFF:LOCATE X,Y+1:PAPER 11:PRINT
     BL$(3):TAG:RETURN
```

```
4500 PLOT BX,BY,11:PRINT BL$;:BY=BY+16
4510 IF TEST(BX+16,BY+2)<10 OR TEST(BX+1
     6,BY+10)<10 THEN 4200
4515 IF BY>342 THEN FF=0:RETURN
4550 PLOT BX+16,BY,11:MOVE BX,BY:PRINT M
     1$;:RETURN
4600 T=TEST(BX-32+64*(BS+2),BY-8):IF T=0
      THEN T=TEST(BX-48+96*(BS+2),BY-8)
4601 IF T<>2 AND T<>5 THEN RETURN
4602 SOUND 1,0,60,15,1,0,9:IF T=2 THEN 4
     620
4603 GOTO 4105
4620 FOR F=1 TO EN: IF ABS(BX-NX(F))<112
      AND ABS(BY-NY(F))<10 THEN 4122
4622 NEXT F:LN=4621:GOTO 9000
5000 WC=WC+1:IF WC>ND THEN WC=1
5005 IF TEST(DX(WC)+16,DY(WC)-12)<>6 THE
     N DY(WC)=DY(WC)-4:GOTO 10000
5010 WD(WC)=1-WD(WC)
5020 DY(WC)=DY(WC)-6:IF DY(WC)<38 OR RND
     >0.97 OR TEST(DX(WC)+16,DY(WC)-16)>
     0 THEN 10000
5030 PLOT -20,0,6:MOVE DX(WC),DY(WC):PRI
     NT DC$(WD(WC));:RETURN
```

```
6000 IF SC(PL)>=5000 AND EM(PL)=0 THEN N
     S(PL)=NS(PL)+1:EM(PL)=1:FOR A=1 TO
     10:SOUND 1,25,8,7:SOUND 1,25,4,0:NE
     XT A
6002 F$=STR$(SC(PL)):SC$(PL)=LEFT$("0000
     0",6-LEN(F$))+RIGHT$(F$,LEN(F$)-1):
     TAGOFF:LOCATE 1+15*(PL-1),1:PAPER 1
     0:PEN 0:PRINT SC$(PL)
6003 IF SC(PL)>HC AND Z1=0 THEN HC$=SC$(
     PL):HC=SC(PL):GOSUB 6020:TAGOFF
6005 SR$=RIGHT$(STR$(SR(PL)),1):IF NP=2
     THEN LOCATE 5+(PL-1)*15,2:PEN 6:PRI
     NT SR$; ELSE LOCATE 20,1:PEN 6:PRIN
     T SR$;
6010 PEN 2:IF NP=2 THEN LOCATE 1+(PL-1)*
     15,2 ELSE LOCATE 16,1
6011 PRINT LEFT$(NS$,NS(PL)):TAG:RETURN
6020 PEN 0:TAGOFF:LOCATE 9,1:PRINT HC$:T
     AG:RETURN
6500 EN=L(0,PL):FOR F=1 TO EN:A=INT(RND*
     2):NX(F)=EE(A):LR(F)=(A-0.5)*2:NY(F
     )=RND*180+30:UD(F)=2*(INT(RND*2)-0.
     5):SP(F)=4*(1+RND*2):NEXT F
6510 RETURN
```

```
6600 HB=1:HX=XC(1)-96+FS*96+(100+FS*96)*
     RND:HY=220:IF HX>640 THEN 6600 ELSE
      RETURN
6650 SB=1:TX=XC(1)-96+FS*96+(100+(4-FS)*
     96)*RND:TY=220:IF TX>640 THEN 6650
     ELSE RETURN
6700 C=C*2+7*(C=4):SOUND C,INT(RND*500)+
     1000,50:Z=SGN(SX+32-HX):IF INKEY(67
     )<>-1 THEN Z=-1
6703 IF INKEY(58)<>-1 THEN Z=1
6705 PLOT HX,HY,0:PRINT BL$;:PLOT HX,HY-
     16:PRINT BL$;:HX=HX+(SR(PL)+1)*Z:HY
     =HY-8
6710 PLOT HX,HY,5:PRINT HB$;:PLOT HX,HY-
     16:PRINT HL$(Z+1);
6720 IF HY-32>SY THEN RETURN
6730 IF HY-SY>64 THEN 6740
6731 IF HX-SX>96 THEN 6740
```

```
6732 IF SY-HY>32 THEN 6740
6733 IF SX-HX>32 THEN 6740
6734 GOTO 11000
6740 IF HY>48 THEN RETURN
6745 Z=33:SOUND 1,0,60,5,2,0,15:XE=HX:YE
     =HY:GOSUB 10010
6750 GOSUB 10500:HB=0:RETURN
6800 PLOT TX,TY,0:PRINT BL$;:TY=TY-16:PL
     OT TX,TY,3:PRINT SB$;
6805 IF TY<40 THEN PLOT TX,TY,0:PRINT BL
     $;:SB=0:RETURN
6810 IF TEST(TX+16,TY-26)<>1 THEN RETURN
      ELSE 11000
7000 SW=SW+1:IF SW>EN THEN SW=1
7002 IF TEST(NX(SW)+28,NY(SW)-8)<>2 AND
     NX(SW)>-28 AND NX(SW)<610 THEN SOUN
     D 1,0,60,5,2,0,15:Z=33:XE=NX(SW):YE
     =NY(SW)+RND*16:GOSUB 10010:GOSUB 10
     500:GOSUB 7900:RETURN
7005 IF RND>L(4,PL) AND SR(PL)>2 AND NX(
     SW)>0 AND NX(SW)<600 THEN 7060
7010 PLOT NX(SW),NY(SW),0:PRINT BL$(3);:
     NX(SW)=NX(SW)+LR(SW)*SP(SW)*(1+0.3*
     EN):NY(SW)=NY(SW)+UD(SW)*SP(SW)*0.3
     5
7015 PLOT NX(SW),NY(SW),2:PRINT  ES$(1+L
     R(SW));:IF LR(SW)*NX(SW)>640 OR NX(
     SW)<-110 THEN GOSUB 7900:RETURN
7020 IF UD(SW)*NY(SW)>210 OR (NY(SW)<35
     AND UD(SW)=-1) THEN UD(SW)=-UD(SW)
7030 IF NX(SW)-SX<96 AND NX(SW)>SX-64 AN
     D NY(SW)-SY<16 AND NY(SW)>SY-16 THE
     N 11000
```

```
7050 RETURN
7060 C=C*2+7*(C=4):SOUND 1,50,15,12,0,4
7063 X2=NX(SW)+30+34*LR(SW):Y2=NY(SW)-8:
     X1=NX(SW)+(500*RND+100)*LR(SW)
7064 Y1=NY(SW)+L(5,PL)*RND-(L(5,PL)*2*RN
     D):IF Y1>200 OR Y1<26 THEN 7064
7065 MOVE X2,Y2:DRAW X1,Y1,13*RND+2
7067 SOUND 1,0,40,5,2,0,15:XE=X1-32:YE=Y
     1+16:Z=33:GOSUB 10010
7068 IF (SY-16>Y1 AND SY-16>Y2) OR (SY<Y
     1 AND SY<Y2) THEN 7071
7070 FOR F=SY-14 TO SY:IF TEST(SX,F)<2 A
     ND TEST (SX+94,F)<2 THEN NEXT F:GOT
     O 7071 ELSE 11000
7071 GOSUB 10500
7072 MOVE X2,Y2:DRAW X1,Y1,0:RETURN
7900 I$=UPPER$(INKEY$):IF EN<2 THEN EN=0
     :RETURN
7910 NX(SW)=NX(EN):NY(SW)=NY(EN):LR(SW)=
     LR(EN):SP(SW)=SP(EN):EN=EN-1:RETURN
9000 TAGOFF:MODE 1:INK 0,0:INK 1,15:BORD
     ER 0:PAPER 0:PEN 1:SPEED KEY 20,3
9005 PRINT "*BREAK*":END
9500 TAGOFF:MODE 1:INK 0,0:INK 1,15:PAPE
     R 0:PEN 1:BORDER 0:SPEED KEY 20,3
```

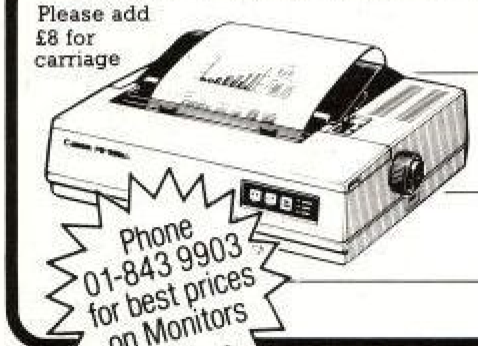
```
9510 PRINT"ERROR";ERR;"IN LINE";ERL:STOP
9600 N1$=CHR$(214):N2$=CHR$(215):N3$=CHR
     $(213):N4$=CHR$(212):N5$=CHR$(210):
     N6$=CHR$(208)
9605 TAGOFF
9610 B$=" ":LOCATE 1,1:PRINT N2$;B$;BL$;
     B$;B$;B$;N1$;BL$;BL$;N2$;B$;N2$;B$;
     B$;N1$;B$;BL$;BL$;N2$
9620 LOCATE 1,2:PRINT BL$;N2$;BL$;B$;N5$
     ;B$;N3$;N5$;N5$;B$;B$;BL$;B$;B$;BL$
     ;B$;BL$;N5$;BL$
9630 LOCATE 1,3:PRINT BL$;N3$;BL$;B$;N6$
     ;B$;B$;N6$;N6$;N2$;B$;BL$;B$;B$;BL$
     ;B$;BL$;N6$;BL$;N2$
9640 LOCATE 1,4:PRINT BL$;B$;N3$;B$;B$;B
     $;N3$;BL$;BL$;N4$;B$;N3$;BL$;BL$;N4
     $;B$;BL$;BL$;BL$;N4$:RETURN
9700 TAGOFF:FOR F=1 TO 20:PEN 1:LOCATE 1
     ,1+F
9710 PRINT F:PEN 2:LOCATE 6,1+F:PRINT RK
     $(F):NEXT F:RETURN
10000 SOUND 1,0,60,5,2,0,15:XE=DX(WC)-RN
      D*32:YE=DY(WC)+RND*16:IF SR(PL)>8
      THEN 10100
10010 IF SR(PL)>10 THEN 10100 ELSE IF YE
      >220 THEN YE=220
10011 IF YE<40 THEN YE=40
10012 PLOT XE,YE,9:PRINT E1$;:MOVE XE,YE
      -16:PRINT E2$;
10015 PLOT XE,YE,2:PRINT E1$;:MOVE XE,YE
      -16:PRINT E2$;
10020 PLOT XE,YE,9:PRINT E1$;:MOVE XE,YE
      -16:PRINT E2$;
```

```
10030 IF XE-SX<96 AND XE>SX-64 AND YE-SY
      <32 AND YE>SY-16 THEN 11000
10035 IF Z=33 THEN Z=0:RETURN
10040 DX(WC)=DX(ND):DY(WC)=DY(ND):ND=ND-
      1:PLOT XE,YE,0:PRINT BL$(2);:MOVE
      XE,YE-16:PRINT BL$(2);:RETURN
10100 IF YE>220 THEN YE=220
10111 IF YE<60 THEN YE=60
10112 INK 0,6:CL=INT(RND*15)+1:PLOT XE,Y
      E,CL:PRINT EX$(3);:PLOT XE,YE-16:P
      RINT BL$(3);:PLOT XE,YE-32:PRINT E
      9$;
10115 IF XE-SX<88 AND XE>SX-88 AND YE-SY
      <44 AND YE>SY-12 THEN 11000
10117 INK 0,0:IF Z=33 THEN Z=0:RETURN
10120 DX(WC)=DX(ND):DY(WC)=DY(ND):ND=ND-
      1
10125 PLOT XE,YE,0:PRINT BL$(3);:MOVE XE
      ,YE-16:PRINT BL$(3);:MOVE XE,YE-32
      :PRINT BL$(3);:RETURN
10500 IF SR(PL)>10 THEN GOSUB 10125:RETU
      RN
10510 PLOT XE,YE,0:PRINT BL$(2);:MOVE XE
      ,YE-16:PRINT BL$(2);:RETURN
11000 HF=L(2,PL):SW=0:DD=0:Z=0:SOUND 1,0
      ,60,15,1,0,9:PLOT SX,SY,7:PRINT EX
      $(3);:IF SY>24 THEN PLOT SX,SY-16:
      PRINT E9$;
11011 FOR F=1 TO 300:I$=INKEY$:INK INT(R
      ND*15),INT(RND*26):NEXT F:FOR F=1
      TO 1000:NEXT F
11012 IF Z1=50 THEN Z1=60:ND=0:EN=0:RETU
      RN
11013 IF Z1=60 THEN RETURN
11014 IF Z1=70 THEN 12000
11015 NS(PL)=NS(PL)-1:EN=0:ND=0:ET=0:FF=
      0:MB=0:HB=0:SB=0:FS=0
11020 IF NP=1 AND NS(1)=0 THEN 12000 ELS
      E IF NP=1 THEN 11027
11025 PL=3-PL:IF NS(PL)=0 THEN PL=3-PL:I
      F NS(PL)=0 THEN 12000
11027 IF SR(PL)/2=INT(SR(PL)/2) THEN DD=
      1
```

The best service, the best value in printers from Viglen

Dot Matrix Printers

Please add £8 for carriage



Canon PW1080A/ Taxan Kaga KP810 **£279**

Epson RX80/FT **£275**

Epson FX80 **£389**

Phone 01-843 9903 for best prices on Monitors

Daisy Wheel Printers

NEW LOW PRICES



Juki 6100 **£369**

Quen Data **£247**

Please add £8 for carriage

Please add £8.00 for the Centronics Interface Cable for the Amstrad

Viglen are also major suppliers to educational and government establishments and welcome further enquiries and orders.

Visit our showroom

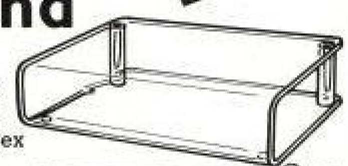
Weekdays 9.30 - 6pm.

Saturday 9.30 - 4pm.

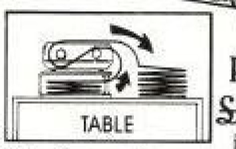
All prices correct at time of going to press

ALL PRICES INCLUDE VAT

Printer Stand



- 80 column dot matrix printers
- Raises printer high enough to put continuous stationery underneath
- Beautifully finished in clear perspex
- Viglen quality every time
- Will accept paper up to 12½" wide
- Non-slip rubber pads



Dimensions:
15" (380mm) wide
12½" (320mm) deep
4" (90mm) high

Please add £3 for carriage

Our price £16.95 inc VAT

Also available 136 column printer stand £27.00

Post to: Viglen Computer Supplies.
Unit 7, Trumpers Way, Hanwell W7 2QA.

Credit Card Holders may order by phone. 01-843 9903.

Please send me ______

I enclose Cheque/P.O. for £ ______ Incl. carriage.

Cheques payable to Viglen Computer Supplies.

Name ______

Address ______

I prefer to pay by ACCESS/BARCLAYCARD
(Delete whichever is not applicable)

Credit Cards valid only if signed by card holder. Address must be the same as card holder.

Card No. ______

Signature ______

DO YOU FIND CHOOSING SOFTWARE HARD?

At the **VIRGIN GAMES CENTRES,** we've worked long and hard to put together the **UK'S BIGGEST RANGE** of **COMPUTER SOFTWARE GAMES.** We've got an unrivalled selection of... Arcade Games, Adventure Games, War Games, Classic Games, Family Games, Sports Games, Business and Educational Software. For Spectrum, QL, Atari, BBC, Electron, Commodore 64, Commodore C16, Enterprise, MSX and Amstrad machines.

Plus a large stock of utilities, peripherals, chess computers, books and magazines – and a range of Sinclair Commodore and Amstrad hardware. **And if you find choosing software hard, we have a team of knowledgeable staff to help you.**

Virgin

GAMES CENTRE

172 Union Street, Aberdeen · 94/96 Briggate, Leeds · 22 Oxford Street, London W1

```
11030 GOSUB 950:RETURN
11900 MODE 1:INK 0,0:INK 1,13:INK 2,6:RE
      TURN
12000 MODE 0:INK 0,0:CLG 0:BORDER 0:FOR
      F=1 TO 70:PAPER 0:INK 1,INT(RND*16
      ):TAGOFF:PEN 1:LOCATE 7,11:PRINT"G
      AME OVER":NEXT F
12010 WA(1)=0:WA(2)=0:N=1:IF SC(N)<=HC(2
      0) THEN N=2:IF SC(N)<=HC(20) OR NP
      =1 THEN 12500
12015 FOR F=20 TO 1 STEP-1:IF SC(N)>HC(F
      ) THEN NEXT F
12020 F=F+1:WA(N)=F:FOR G=20 TO F+1 STEP
      -1:HC(G)=HC(G-1):HC$(G)=HC$(G-1):N
      EXT G
12025 HC$(F)=SC$(N)+" "+RIGHT$(STR$(SR(N
      )),1)+" "+N$(N):HC(F)=SC(N):N=N+1:
      IF SC(N)<=HC(20) OR NP=1 OR N=3 TH
      EN 12500 ELSE 12015
12500 IF HC=0 THEN 500
12502 INK 2,6:INK 0,0:MODE 0:CLG 0:BORDE
      R 0:INK 3,INT(RND*15)+12:INK 1,INT
      (RND*15)+12:PAPER 0:PEN 1
12505 GOSUB 9600
12507 IF SC(2)>SC(1) AND SC(1)>0 THEN WA
      (1)=WA(1)+1
12508 IF Z=40 THEN WA(1)=0:WA(2)=0
12510 FOR F=1 TO 20
12515 IF HC(F)=0 THEN 12545
12520 LOCATE 2+(F>9),F+5:PAPER 0:IF F=WA
      (1) OR (F=WA(2) AND NP=2) THEN PAP
      ER 2
12530 Z$=STR$(F)+" "+HC$(F):PRINT Z$
12540 NEXT F:PAPER 0
12545 IF INKEY$="" AND Z=0 THEN 12545
```

```
12550 IF Z=40 THEN FOR F=1 TO 2000:IF IN
      KEY$="" THEN NEXT F
12555 IF Z=40 THEN 500
12600 INK 0,0:PAPER 0:CLS
12610 FOR F=1 TO NP:PRINT:AV(F)=AV(F)+(S
      C(F)-AV(F))/5:FOR G=RN(F) TO 20:IF
      AV(F)>RK(G) THEN NEXT G
12620 MODE 1:G=G-1:PEN 1:IF G=0 THEN G=1
12621 IF G>RN(F) THEN PRINT N$(F);:PEN 3
      :PRINT" YOU HAVE BEEN PROMOTED FRO
      M":GOTO 12630
12622 IF G<RN(F) THEN PRINT N$(F);:PEN 3
      :PRINT" YOU HAVE BEEN DEMOTED FROM
      ":GOTO 12630
12625 PEN 1:PRINT N$(F);:PEN 3:PRINT" YO
      UR RANK IS STILL":PEN 2:PRINT RK$(
      G):GOTO 12635
12630 PEN 2:PRINT RK$(RN(F));:PEN 3:PRIN
      T" TO ";:PEN 2:PRINT RK$(G):RN(F)=
      G:PR(P1(F))=RN(F)
12635 FOR G=1 TO 700:I$=INKEY$:NEXT G
12640 IF INKEY$="" THEN 12640 ELSE NEXT
      F:GOTO 500
13000 SM=0:FS=0:FOR F=1 TO 1000:NEXT F
13001 IF MB THEN TAGOFF:LOCATE MX,MY:PAP
      ER 11:PRINT "  ":TAG
13002 SR(PL)=SR(PL)+1:GOSUB 6000
13005 SS(4,PL)=SS(4,PL)-50*(SS(4,PL)<750
      ):IF SR(PL)/4=INT(SR(PL)/4) THEN S
      S(2,PL)=SS(2,PL)+50
13007 IF SR(PL)/2=INT(SR(PL)/2) THEN DD=
      1 ELSE DD=0
13010 L(1,PL)=L(1,PL)+0.05:L(2,PL)=L(2,P
      L)+1+(L(2,PL)>8):L(3,PL)=L(3,PL)-0
      .006:L(4,PL)=L(4,PL)-0.1
13020 L(5,PL)=L(5,PL)+16:HF=L(2,PL)
13030 TAGOFF:WINDOW #1,1,20,13,24:CLS #1
      :PLOT SX,SY,1:TAG:PRINT SU$(LR);
13031 PLOT 0,220,0:PRINT STRING$(20,CHR$
      (156));
13032 I$=INKEY$:I$=INKEY$:GOSUB 13165
```

```
13035 EN=0:MB=0:HB=0:SB=0:ND=0:ET=0:NS=1
      2-8*DD:SO=0:TAG:RETURN
13165 NS=12:FOR F=1 TO 3:XC(F)=640+(3-F)
      *16:YC(F)=398-F*32:SL$(F)="":FOR G
      =1 TO 4:SL$(F)=SL$(F)+SH$(F)+STRIN
      G$(3-F,CHR$(156)):NEXT G,F
13168 IF DD THEN FOR F=1 TO 4:PX(F)=640+
      176*(F-1):PY(F)=350:GE(F)=1:NEXT F
      :NS=4
13170 RETURN
14000 SM=0:DD=0:FOR F=1 TO 1000:NEXT F:S
      R(PL)=SR(PL)+1:GOSUB 6000
14005 SS(1,PL)=SS(1,PL)+50:SS(3,PL)=SS(3
      ,PL)+50:L(3,PL)=L(3,PL)-0.006:L(0,
      PL)=L(0,PL)-(L(0,PL)<10)
```

```
14010 GOTO 13030
15000 MODE 1:INK 1,6:INK 2,18:INK 3,26
15010 GOSUB 16000:LOCATE 1,7:PEN 1:PRINT
       "MENU"
15020 LOCATE 1,9:PEN 3:PRINT "LEFT TO IT
      SELF THE COMPUTER WILL LOOP   THRO
      UGH OPTIONS 8,6 AND 5 CONTINUALLY.
        PRESSING ANY KEY DURING THESE RE
      TURNS   TO THE MAIN MENU."
15030 GOSUB 16100
15040 GOSUB 16000::LOCATE 1,7:PEN 1:PRIN
      T "PLAYERS & RANKINGS"
15050 LOCATE 1,9:PEN 3:PRINT "BEFORE A G
      AME IS PLAYED IT IS NECESSARY TO F
      ORM A LIST OF PLAYERS TAKING PART
        (MENU OPTION 3).  THE COMPUTER S
      TORES   THE NAME OF EACH PLAYER &
      HIS OR HER     RANKING SO PLAYERS C
      AN THEN BE SELECTED BY NUMBER."
15060 LOCATE 1,16:PRINT "AFTER EACH GAME
       THE PLAYERS CONCERNED    WILL BE P
      ROMOTED OR RELEGATED AND THEIR NEW
       RANKS STORED AUTOMATICALLY BY THE
         COMPUTER.  (NOTE: THE RANKS ARE
                CALCULATED ON AVERAGE SCO
      RES)"
```

```
15070 GOSUB 16100
15080 GOSUB 16000:LOCATE 1,7:PEN 1:PRINT
       "THE GAME"
15090 LOCATE 1,9:PEN 3:PRINT "YOU ARE IN
       COMAND OF A NUCLEAR SUBMARINEPATR
      OLLING THE NORTH ATLANTIC DURING
        WORLD WAR VII.  YOUR MISSION IS
      TO       DESTROY ENEMY SHIPS AND AN
      Y ENEMY SUBS  WHICH CROSS YOUR PAT
      H."
15100 LOCATE 1,16:PRINT "YOU HAVE THREE
      SUBS INITIALLY, BUT AN   EXTRA IS
      AWARDED AT 5000 POINTS.":GOSUB 161
      00
15110 GOSUB 16000:LOCATE 1,7:PEN 1:PRINT
       "HAZARDS"
15120 LOCATE 1,9:PEN 2:PRINT "DESTROYERS
      "
15130 LOCATE 1,11:PEN 3:PRINT "AFTER EAC
      H WAVE OF THE ENEMY FLEET YOU  MUS
      T CONTEND WITH THE DESTROYERS.
        THESE MOVE FROM RIGHT TO LEFT,
      CIRCLE   TWICE, AND THEN CONTINUE
      LEFT.":GOSUB 16100
15140 GOSUB 16000:LOCATE 1,7:PEN 2:PRINT
       "DEPTH CHARGES"
15150 LOCATE 1,9:PEN 3:PRINT "ALL SHIPS
      DROP THESE, INCLUDING MTBS ANDDEST
      ROYERS.  GIVE THEM A WIDE BERTH, A
      S THEIR EXPLOSIONS ARE LARGE (ESPE
      CIALLY  AFTER SCREEN #9, WHEN THE
      EXPLOSIONS     BECOME HYPER-HUGE!).
      "
15160 GOSUB 16100
```

```
15170 GOSUB 16000:LOCATE 1,7:PEN 2:PRINT
       "MOTOR TORPEDO BOATS (MTBS)"
15180 LOCATE 1,9:PEN 3:PRINT "THESE OCCU
      R ON ALL SCREENS AND TEND TO  DROP
       MORE THAN THEIR FAIR SHARE OF DEP
      THCHARGES!  HITTING ONE OF THESE A
      WARDS A MYSTERY BONUS."
15190 GOSUB 16100:GOSUB 16000:LOCATE 1,7
      :PEN 2:PRINT "ENEMY SUBMARINES"
15200 LOCATE 1,9:PEN 3:PRINT "ON SCREEN
      #1 THESE ARE PRETTY HARMLESS- OCCU
      RING SINGLY AND NOT FIRING.  HOWEV
      ERON SCREEN #3 THEY BECOME 'LASER-
      SUBS'   WHICH FIRE AT YOU.  ON SCR
      EEN #3 THEY   CAN ONLY FIRE AT A S
      MALL ANGLE TO THE"
15210 LOCATE 1,14:PRINT "HORIZONTAL, BUT
       THIS ANGLE INCREASES AS YOU PROGR
      ESS TO HIGHER SCREENS.  THE     NUM
      BER OF SUBS ATTACKING YOU AT ONE T
      IMEINCREASES BY ONE EVERY TWO SCRE
      ENS.":GOSUB 16100
15220 GOSUB 16000:LOCATE 1,7:PEN 2:PRINT
       "HOMING BOMBS"
```

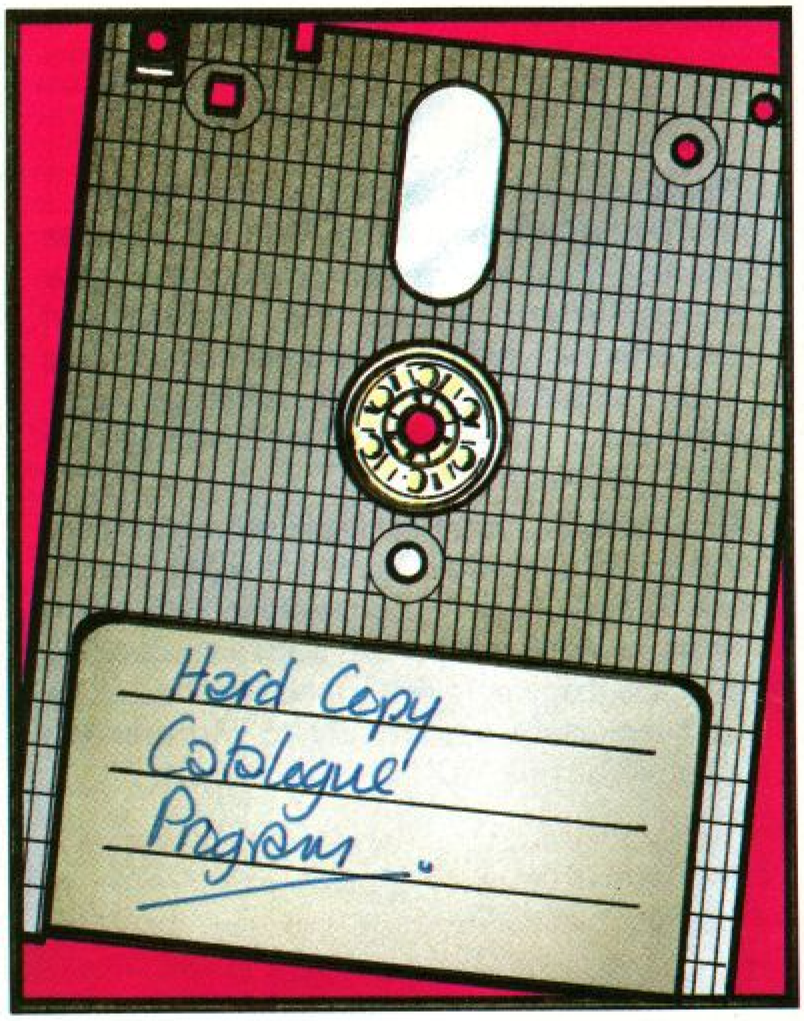
```
15230 LOCATE 1,9:PEN 3:PRINT "THESE OCCU
      R FROM SCREEN #5 ONWARDS.     THE
      HEAT SEEKING MICROFREEP-WAVE
        NUETRALIZER HOMES IN ON THE GYRO
      SCOPIC  TURBOROTATIONAL MOTION OF
      YOUR SUB'S     PROPELLER.  ALTERNAT
      IVELY THEY CAN BE"
15240 LOCATE 1,14:PRINT "CONTROLLED BY P
      LAYER 2 (OR ANYBODY ELSE)USING ";:
      PEN 1:PRINT"Q";:PEN 3:PRINT " AND
      ";:PEN 1:PRINT "E";:PEN 3:PRINT "
      ON THE KEYBOARD."
15250 LOCATE 1,17:PRINT "SHOOTING A HOMI
      NG BOMB GAINS A MYSTERY  BONUS.":G
      OSUB 16100
15260 GOSUB 16000:LOCATE 1,7:PEN 2:PRINT
       "STRAIGHT BOMBS"
15270 LOCATE 1,9:PEN 3:PRINT "THESE OCCU
      R FROM SCREEN #7 ONWARDS.     THEY
       SIMPLY MOVE STRAIGHT DOWNWARDS.
        HOWEVER, THEY ARE SOMEWHAT FASTE
      R THAN  DEPTH CHARGES!":GOSUB 1610
      0
15280 GOSUB 16000:LOCATE 1,7:PEN 1:PRINT
       "CONTROLS"
15290 LOCATE 1,9:PEN 3:PRINT "A JOYSTICK
       IS ESSENTIAL TO PLAY NSUB.   NORM
      AL MOTION OF THE JOYSTICK MOVES YO
      URSUB IN THE REQUIRED DIRECTION, H
      OWEVER  THE FIRING IS A LITTLE MOR
      E TRICKY-"
15300 LOCATE 1,14:PRINT "IF YOUR SUB IS
      STATIONARY OR MOVING      UPWARDS (
      AT ALL) THEN PRESSING THE FIRE BUT
      TON WILL FIRE UPWARDS.  AT ALL OTH
      ER TIMES IT WILL FIRE IN THE DIREC
      TION IT  IS POINTING.":GOSUB 16100
15310 GOSUB 16000:LOCATE 1,13:PEN 1:PRIN
      T "HAPPY HUNTING BUCKO....":GOSUB
      16100:RETURN
15990 GOTO 15990
16000 CLS:GOSUB 9600:PEN 1:FOR F=1 TO 4:
      LOCATE 26,F:PRINT "INSTRUCTIONS":N
      EXT F:RETURN
16100 I$=INKEY$:PEN 2:LOCATE 1,24:PRINT
      "PRESS <SPACE> TO CONTINUE":I$=INK
      EY$
16110 IF INKEY$<>" " THEN 16110 ELSE RET
      URN
```

ACU

Printed Disc Catalogue without CP/M

By J A Campbell

Disc users may wish to keep a print-out of disc directories, and the CP/M DIR output can be diverted to the printer via [CTRL] P. The friendlier AMSDOS CAT, however, which gives a sorted directory listing is preferable, but one cannot get a "hard copy" - unless one uses the program below. The same program will also work for tape CAT as well.



A diversion

The program works by making use of the CPC464 firmware hooks, intercepting screen output and sending it to the printer instead. The BASIC program listed below generates a short machine-code routine to perform the intercept, and the only special logic is to send a line-feed (LF) if the target (screen) column is to the left of the previous column sent. This works just fine for the screen output generated by CAT, and may be suitable for other text output too.

The Basic program adds a few simple frills to the CAT output, such as date, disc number, and contents - all solicited from the user. The clever work is done via line 120 which switches on the intercept, does a CAT, then switches off the intercept.

Line 100 sets the mode even though the screen never sees the output. mode 0 ensures a single column listing, but you can also use modes 1 and 2 for 2-up and 4-up directories.

The machine code held in the DATA lines is also here listed in Assembler, for the interest of readers who wish to see the "nitty-gritty" of the intercept method.

```
               10 ; DIVERT SCREEN OUTPUT TO THE PRINTER
               20
               30 ; A decrease in column (H) triggers LF
               40 ; Data (A) is otherwise sent blind.
               50
8000           60        ORG _8000
               70
8000 F5        80  SEND: PUSH AF             ;save outgoing character
8001 3A3280    90        LD A, (PREVCOL)     ;get previous column
8004 BC        100       CP H                ;is new column less?
8005 3807      110       JR C,LAB2           ;-->no
8007 3E0A      120 LAB1: LD A,10             ;yes, send LF
8009 CDF1BD    130       CALL _BDF1          ;MC WAIT PRINTER
800C 30F9      140       JR NC,LAB1          ;-->retry until sent
800E 7C        150 LAB2: LD A,H              ;current column
800F 323280    160       LD (PREVCOL),A      ;save for next time
8012 F1        170       POP AF              ;restore outgoing char
8013 F5        180 LAB3: PUSH AF             ;save again
8014 CDF1BD    190       CALL _BDF1          ;MC WAIT PRINTER
8017 3803      200       JF C,DONE           ;-->sent OK
8019 F1        210       POP AF              ;restore character
801A 18E4      220       JR SEND             ;-->and try again
801C F1        230 DONE: POP AF              ;restore char
801D C9        240       RET                 ;-->exit
               250
801E 2AD4BD    260 SET:  LD HL,(_BDD4)       ;divert TXT WRITE CHAR
8021 223380    270       LD (SAVE),HL
8024 210080    280       LD HL,SEND          ;to our sender
8027 22D4BD    290       LD (_BDD4),HL
802A C9        300       RET
               310
802B 2A3380    320 RESET:LD HL,(SAVE)        ;restore TXT WRITE CHAR
802E 2A3380    330       LD (_BDD4),HL
8031 C9        340       RET
               350
8032 00        360 PREVCO:DEFB 0
8033 0000      370 SAVE:  DEFW 0
```

```
10 'CAT Hard Copy, by John A Campbell
20 '================================
30 MEMORY &7FFF:MODE 2
40 FOR A=&8000 TO &8032:READ BYTE:POKE A
   ,BYTE:NEXT
50 PRINT"DATE = ";:INPUT d$
60 PRINT#8,STRING$(80,"=")
70 WHILE 1
80 MODE 2:PRINT"Disc = ";:INPUT a$:IF a$
   ="" THEN STOP
90 PRINT"Contents = ";:INPUT c$
100 MODE 2
110 PRINT#8,"DISC: ";a$;"      DATE: ";d$
   :PRINT#8:PRINT#8,c$
120 CALL &801E:CAT:CALL &802B
130 PRINT#8:PRINT#8,STRING$(80,"=")
140 WEND
150 REM machine code to load at &8000-&8
   032
160 DATA &F5,&3A,&32,&80,&BC,&38,&07,&3E
   ,&0A,&CD,&F1,&BD,&30,&F9,&7C,&32,&32
170 DATA &80,&F1,&F5,&CD,&F1,&BD,&38,&03
   ,&F1,&18,&E4,&F1,&C9,&2A,&D4,&BD,&22
180 DATA &33,&80,&21,&00,&80,&22,&D4,&BD
   ,&C9,&2A,&33,&80,&22,&D4,&BD,&C9,&00
```

DISCOUNT SOFTWARE

GAMES		BUSINESS & TUTORIAL		DISC BASED	
Ghostbusters	8 25	Guide To Basic 1	15 95	Centre Court	10 50
Alien 8	7 50	Guide To Basic 2	15 95	Amsgolf	10 50
Knight Lore	7 50	Amsword	15 95	Chess	10 50
Jump Jet	8 25	Devpac Ass Diss	19 95	Amsword	18 95
The Hobbit	11 25	Concise Basic Spec	10 95	Masterfile	22 95
Way Of Expl Fist	7 75	Concise Firmware	15 95	Tasword	18 95
Tomb Of Kuslak	5 25	Screen Designer	10 95	Project Planner	22 95
Combat Lynx	6 75	Masterfile	19 95	Entrepreneur	22 95
American Football	7 75	Pascal	26 95	Decision Maker	22 95
Backgammon	7 50	Abersoft (forth)	19 95	Starwatcher	18 95
Centre Court	6 75	Mastercalc	16 95	Pascal	32 95
Detective	6 75	Tasword 464	15 95	Mastercalc	22 95
Fruity Frank	5 25	Tasprint 464	7 95	Screen Designer	15 25
Forest At Worlds End	4 50	Tascopy	7 95	- - - -	
Heroes Of Karn	4 50	Pitman Typing Tutor	7 50	Box Of 10 Discs	37 50
Football Manager	6 25	The Quill	13 50	DDI-1 Firmware Spec	8 50
JY-2 Joystick	9 75	Mini Office	4 75	Guide To LOGO	8 50

ALL PRICES INCLUDE POSTAGE & VAT

All Original Titles. Write for FREE price list. Please send Cheques/pos to:

M.J.C. SUPPLIES,

'SCOJA', LONDON ROAD, HITCHIN, HERTS, SG4 9EN

IMPROVE YOUR PROGRAMING SKILLS

X·BASIC

Will add **58** new commands to your CPC 464 to give your programs that professional touch. Fully relocatable, uses only 2·8k of memory and comes complete with demonstration program and 16 page manual.

TAPE – Only **£11·50** inc. P&P

TURBO PASCAL v3·0

The latest version of this superb program offers random disc files, chaining, overlays, dynamic strings, structured constants, 'Wordstar' compatable editor. Includes sample spread sheet, plus graphics and windows library, 250 page manual.

DISC – Only **£80·00** inc. P&P

PLEASE SEND CHEQUES/P.O's TO

CRESCENT SOFTWARE

94, JUBILEE CRESCENT, COVENTRY. CV6 3ES

ADVENTURE CREATOR

For just £2.99 you can buy THE AMSTRAD PENTACLE, a program which takes all the hard work out of writing adventures on the Amstrad. Just type in the program provided in our £2.99 book, THE AMSTRAD PENTACLE, and follow the instructions, and you'll be creating your own, original adventures. It comes complete with a full set of data for the medieval adventure *Castle of Doom*. So, for just £2.99, you get the book THE AMSTRAD PENTACLE which contains the full listing of the adventure-creating program, full instructions, and a complete set of data for the *Castle of Doom* adventure. You can even market the adventures you write with this package – without paying a penny in royalty!

DYNAMIC GAMES FOR THE AMSTRAD contains 50 exciting games for your computer, including arcade programs, a complete *Chess*, adventures, and much more. Complete with detailed instructions. Just £5.95.

Both THE AMSTRAD PENTACLE (ISBN 0 907563 70 8) and DYNAMIC GAMES FOR THE AMSTRAD (ISBN 0 947695 16 8) are available from your computer or book store, or by mail (post free) from:
Interface Publications Ltd., Dept. AM,
9/11 Kensington High Street, London W8 5NP
(UK Trade: WHS Distributors)

Interface

PRINTER BARGAINS

PRICES INCLUDE VAT CABLES AND NEXT DAY DELIVERY BY SECURICOR

MANNESMANN TALLY MT80+ .... ONLY £219

* 100 characters per second. 80 column.
* Quality print style for letters.
* Fiction and tractor feed standard.
* Subscript and superscript.
* Bold and underscore
* Enlarge
* Condenced

TAXAN KP810 .... ONLY £289

* 160 characters per second. 80 column.
* 27 cps. in Near Letter Quality mode (23 x 18 matrix).
* Friction and tractor feed standard.
* Subscript and Superscript.
* Bold and underscore.
* Enlarged.
* Condenced.

QUEN DATA DAISYWHEEL .... ONLY £279

* 18 characters per second 14 inch platen.
* Friction feed Sheet feeder option £219.
* Bold and shadow printing.
* Underscore

Printer cable	£12
2000 shts. fanfold paper (supplied with printer)	£16
Tasword 464	£16
Tasword 464D	£22
Tascopy 464	£9
Tasprint 464	£9

Amstrad 6128 with monochrome monitor
+ 1st. disk drive £308

Amstrad 6128 with colour monitor
+ 1st. disk drive £408

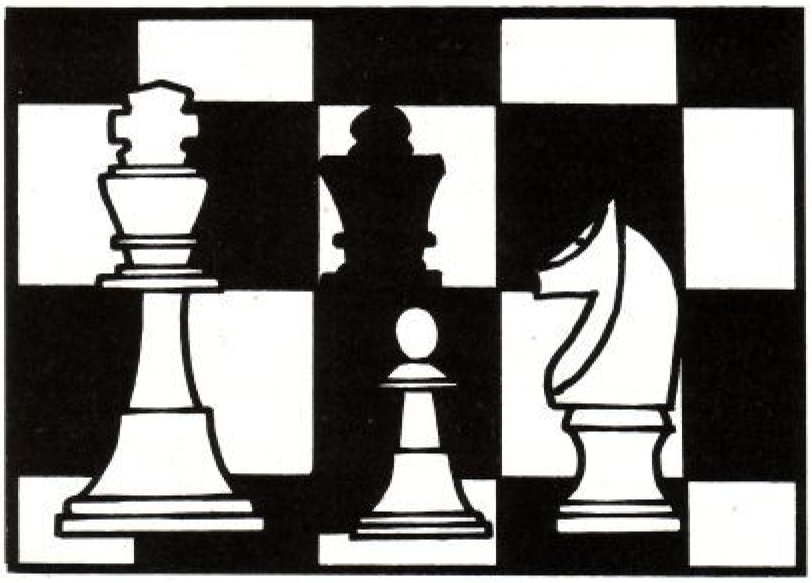
BARGAIN
***** CUMANA SECOND DRIVE FOR JUST £99 *****
BARGAIN

PHONE (0267) 231246 FOR PERSONAL ASSISTANCE!!!!!!

STRONG COMPUTER SYSTEMS

BRYN COTTAGE, PENIEL, CARMARTHEN, DYFED, SA32 7DJ

Chess



Machines which can play a good game of chess have been the goal of man for many hundreds of years. In the mid 17th Century a machine called "The Turk" was touted around the castles of the known world for the amusement of the crowned heads of the time. It was later found to be a fraud, containing a chess-playing midget.

With the advent of computers, mathematical minds turned their attention to chess algorithms. As time has progressed, the standard of computers chess has improved. The sceptical chess-playing community has seen electronic beasties beat club players and work their way through the ranks of the stronger players. Chess players claim that computers will never consistently beat Grand Masters, students of computer science are sure that it is just a matter of computer power, a problem which will solve itself with time.

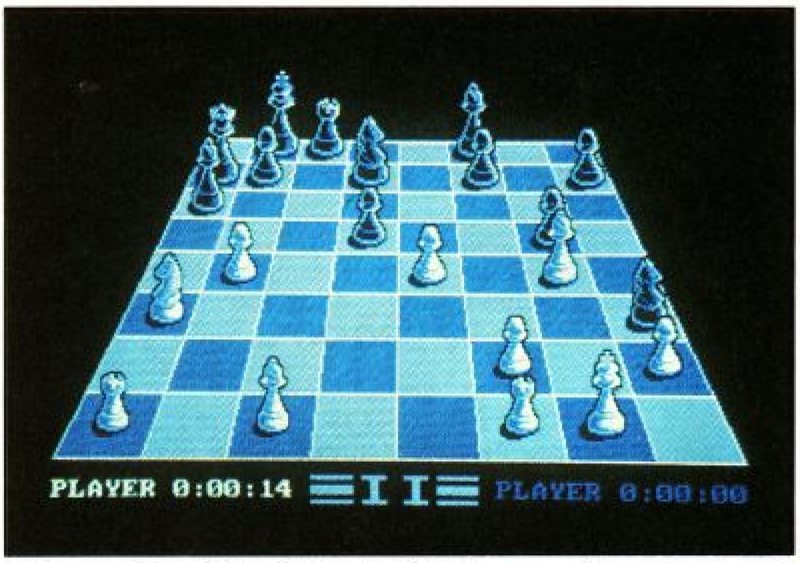
Part of the fun of playing chess is the beauty of the pieces, computer chess has always been limited in this respect. Large computers lacked high resolution graphics and the micros which had the graphical capability were too tight on RAM to squander it on pretty pictures. With the advent of the 64K home micro the situation has eased. The first software house to produce a 3D Chess was Psion who wrote the game for the Sinclair QL and Apple Macintosh. Two software houses have.. erm 'borrowed' the idea to produce 3D Chess for the Amstrad. The software houses are CP Software and Amsoft.



The Amsoft game is an improved version of the old favourite 'Cyrus II'. CP Software, not content with the gimmick value of a board have added digitised speech to the game and called it "3D Voice Chess"

If you are an amateur player you will find that both programs play an acceptable game, in our quite exhaustive testing neither games broke any rules and they both seemed capable of castling on both sides.

At the highest levels, Cyrus has the edge, it is both a little faster at moving and seems to play a better game. The 3D moves slow down the games so if you are a serious player you can select a 2D mode, not as much fun but it does shorten the games. The movement in the Amsoft program is much nicer than that in the CP version. Full sprite routines have been written so that as the pieces move, they go in front of and behind other pieces in the correct way. Voice chess copies the pieces from one place to another and so loses some of its charm.



The sound quality of 3D voice chess is poor, if you strain and read the prompt on the screen you can just about make out what the program is saying. The speech does not require extra hardware so managing to produce anything at all is impressive, but after a while the croaky buzz becomes annoying and I spent most of the time playing with the sound off.

To move a piece in the CP software game you use standard chess letter/number notation. Pressing Z shows the numbers and letters but because the whole screen is re-drawn after every move they vanish at the end of your turn. It would have been much more friendly if the Z key had been a toggle and you could keep the numbers displayed. Cyrus II uses a cursor arrow which floats above each square. You move the arrow to the square you want to move from and press copy, cursor to the square you want to move to and press copy again. I found this a much more natural way to select moves, it was this above anything else which made me prefer Cyrus.

Chess is one of those games which every computer owner should have, if only to answer the argument of "Yes, but what can it do?" If you are not going to play chess very often and just want to impress a visting aunt the feature pack 3D voice chess may be better. It has the distinct advantage that it allows you to copy the program to disc, something which is bound to win it a lot of friends and which saves CP software the cost of duplicating discs. If you are a dedicated chess player or you intend to play the game a lot you will probably prefer the prettier graphics and better playability of the Amsoft game.

O.J. SOFTWARE

FAST FRIENDLY SERVICE

SPECIAL ORDER TWO OR MORE ITEMS AND DEDUCT AN EXTRA 50P PER ITEM

ADVENTURE		ARCADE (CONT)		STRATEGY/SIMULATION	
FOREST WORLDS END	£4.95	DARKSTAR (664)	£6.95	HANDICAP GOLF	£5.95
HEROES OF KARN	£4.95	TANKBUSTERS (664)	£6.95	FOOTBALL MANAGER (664)	£6.95
JEWELS OF BABYLON	£4.95	ALIEN (664)	£6.95	WORLD CUP FOOT (664)	£6.95
RED MOON (664)	£5.95	COMBAT LYNX (664)	£7.95	FIGHTER PILOT (664)	£7.95
EMERALD ISLE (664)	£5.95	D.MOUSE D. TROUBLE (664)	£7.95	HIGGINS SNOOK/POOL(D)	£7.95
ERIK THE VIKING	£8.50	DALEY THOMPSONS	£7.95	CENTRE COURT (D)	£7.95
GREMLINS	£8.95	FRANK N STEIN	£7.95	G.PRIX RALLY II (664)	£7.95
RING OF DARKNESS	£8.95	FANTASTIC VOYAGE (664)	£7.95	BATTLE FOR MIDWAY	£8.50
DUN DARACH (664)	£8.95	RED ARROWS (664)	£7.95	**BUS/UTILITIES**	
THE HOBBIT (664)	£12.95	SCOUT STEPS OUT (664)	£7.95	MINI OFFICE (D)	£4.95
ARCADE		ROCKY HORROR SHOW	£7.95	MASTERFILE/CALC (D)	£21.95
AIRWOLF (664)	£7.95	SORCERY (664)	£7.95	TASWORD 464 (D)	£17.95
3D STARSTRIKE (664)	£5.95	EVERYONES A WALLY (664)	£8.95	THE QUILL (D)	£14.50
CONFUZION (664)	£5.95	BEACHEAD (664)	£8.95	**ACCESSORIES**	
DEATH PIT	£5.95	WAY EXP FIST (664)	£8.95	BLANK 3" DISCS	£4.50
DIGGER BARNES	£5.95	KNIGHTLORE (664)	£8.95	QUICKSHOT II JOYSTICK	£9.95
FRUITY FRANK (664)	£5.95	MINDER (664)	£8.95	COVER 2PC STATE M/COL	£6.95
SIR LANCELOT (664)	£5.95	GHOSTBUSTERS	£9.50	AMSTRAD SPEECH SYN	£27.95

NOTES:- (D) = DISC VERSION AVAILABLE (TAPE PRICE £3.50): (664) = RUNS ON 664 MOST ORDERS DESPATCHED BY RETURN (OUT OF STOCK ITEMS USUALLY WITHIN 1 WEEK) CHEQUES/PO'S TO O.J. SOFTWARE (PRICES INCL U.K. P & P.) 273 MOSSY LEA ROAD WRIGHTINGTON WIGAN LANCS WN6 9RN

Write or phone (0257) 421915 for FREE LIST and LATEST RELEASES

OVERSEAS ORDERS. PLEASE ADD 50P EUROPE, £1.00 OTHERS, PER ITEM.

MACSOFT

Quality Educational Software,

For the *AMSTRAD CPC 464*

EASY TYPE: Two programs to teach touch-typing to all ages, with on screen lessons, sentence and paragraph structured exercises with complete correction facilities (inc. words per minute). Achieve 40 Words per Minute in under 30 hours. Full Course in twin cassette pack with manual £6.95

QUICK-START 1 AND **2** - Educational game packs for progressive enjoyment with full progress monitoring facilities.

Quick-Start 1: For 4-7 year olds. Education for fun. ***Pac-Maths*** : Add and Subtract single/double digit numbers. ***Odd-Bodd*** : Word recognition program. ***Shapely Sam*** : Teachers basic recognition of shapes. ***Money Mac*** : Learn about money the amusing way.

TWIN CASSETTE PACK WITH INSTRUCTION MANUAL £6.95

Quick-Start 2: Enjoyable maths education for 8-14 year olds. ***Operation Area*** : Area estimation and measurement program. ***Fraction Freeze*** : How to form and evaluate fractions. ***Pick Percent*** : Uses of percentages shown and tested. ***MultiDiv*** : Multiply and Divide the exciting way.

TWIN CASSETTE PACK WITH INSTRUCTION MANUAL £6.95

ALL PRICES SHOWN INCLUDE POSTAGE AND PACKING TO U.K. OR IRELAND CHEQUES/P.O'S TO:

MACSOFT, Harbour Road, Mullingar, Co.Westmeath, Ireland.

MONEY MANAGER

for the

AMSTRAD CPC464/664/6128

Money Manager is an easy-to-use system for recording all financial transactions as a matter of record (unlike most 'budgeting' systems), and for analysing them in a number of very powerful ways in order to facilitate sound financial management. It is ideal for controlling the finances of a small business, or for users wishing to control their personal finances in a businesslike way.

UNRIVALLED RANGE OF FEATURES:

- 50 user-defined income/expenditure classes, in logical groups.
- 9 user-defined accounts (bank, cash, credit card etc.)
- 12 months of data in memory.
- Automatic updating of starting balances when advancing months.
- 100 entries per month.
- Validated entry of date, account, reference, class, descriptive text, amount, user-defined flag.
- Easy editing of entries (also validated).
- Entries optionally sorted e.g. by date.
- Full selectivity of report categories by account, class and flag.
- Detailed statements for selected months.
- Summary tables (class vs month) for whole year, with totals.
- Summary tables (class vs account) for whole year, with totals.
- Bar graphs (amount vs month) of 4 categories simultaneously.
- Pie charts (amount per year) of 10 categories simultaneously.
- Global search for any string.
- User-selected colours/shades.
- Drives any 80-column printer.
- Realistic set of demonstration/practice data.
- Comprehensive 12-page manual.

*Cassette: **£14.95** Disc: **£17.95** (incl. VAT, p&p)*

Connect Systems

3 Flanchford Road, London W12 9ND

AMSTRAD CPC 464 SOFTWARE

TITLE	RRP	2U
AMERICAN FOOTBALL	9.95	7.55
ALIEN 8	9.95	7.75
ANDROID 1	7.95	6.45
A VIEW TO A KILL	10.99	8.45
BEACH HEAD	9.95	7.75
BEACH HEAD 11	9.95	7.75
BLAGGER	7.95	6.15
BRUCE LEE	9.95	7.45
BATTLE FOR MIDWAY	9.95	7.35
BUCK ROGERS	9.95	7.45
CONAN	9.95	7.45
CHUCKIE EGG 11	7.95	6.55
DEFEND OR DIE	7.95	6.35
DAMBUSTERS	8.95	9.75
D.T.DECATHLON	8.95	7.15
D.T. SUPERTEST	8.95	7.15
DARK STAR	7.95	6.40
DEATH PIT	6.95	5.45
E'ONES A WALLY	9.95	7.45
FOOTBALL MANAGER	7.95	6.20
FRANK BRUNOS BOXING	8.95	7.25
FIGHTER PILOT	8.95	6.95
FONT 464	7.95	6.25
FRUITY FRANK	6.95	5.50
GRAND PRIX DRIVER	8.95	6.45
GHOSTBUSTERS	10.99	8.45
GILLIGANS GOLD	7.95	5.95
GROGS REVENGE	9.95	7.45
HOBBITT	14.95	11.85
INVOSTAT	30.00	25.75
JETBOOT JACK	7.95	6.25
JAMMIN	8.90	6.85
JET SET WILLY	8.95	6.45
JOHNY REB	6.95	5.65
KUNG FU	8.95	7.15
KNIGHT LORE	9.95	7.55
LORDS OF TIME	9.95	7.40
MAGIC SWORD	8.95	6.95
MINDER	9.95	7.45
MINI OFFICE	5.95	4.90
MANIC MINER	7.95	6.25
MILLIONAIRE	6.95	5.50
MASTER OF THE LAMPS	10.95	9.15
MUSIC COMPOSER	9.95	8.15
POPEYE	5.95	5.15
POLE POSITION	9.95	7.65
RAID O'ER MOSCOW	9.95	7.75
STRIP POKER	9.95	7.55
S. DAVIS SNOOKER	7.95	5.80
SWORDS & SORCERY	9.95	7.55
SPYHUNTER	9.95	7.55
SUPER PIPELINE	8.90	7.15
SORCERY	8.95	7.35
SNOWBALL	9.95	7.40
SUPERCHESS	9.95	8.15
TAPPER	9.95	7.55
TRANSACT	30.00	25.45
TASWORD 464	19.95	16.95
TASPRINT 464	9.90	8.00
TECHNICIAN TED	7.95	6.45
TENNIS	8.95	7.25
TASCOPY	9.90	8.00
UNCLE CLAUDE	7.95	6.45
WORLD CUP	7.95	6.55
WIZARDS LAIR	6.99	5.85
WANTED MONTY MOLE	8.95	7.25
ZAXXON	9.95	7.50

SPECIAL OFFERS

TITLE	RRP	2U
3D STARSTRIKE	6.95	5.40
AMDSTRAD ARTIST	9.95	6.95
COMBAT LYNX	8.95	6.85
CONFUZION	6.95	5.40
HYPER SPORTS	8.95	6.95
THE QUILL	16.95	14.25
ROCKY HORROR SHOW	8.95	5.95
ZAPP	14.95	11.95
ZORRO	9.95	7.65
EASY VAT ACCOUNTS	39.50	32.50
PINBALL WIZARD	8.95	7.15
CENTRE COURT	8.95	6.85
HUNTER KILLER	8.95	6.85
HARRIER ATTACK	8.95	6.85
FRANK-N-STEIN	8.95	6.85
STOCK MARKET	8.95	6.85
CLASSIC RACING	8.95	6.85
CODE NAME MAT	8.95	6.85
MASTERFILE	24.95	19.95

SEND CHEQUE/P.O PAYABLE TO:

'BUTTSOFT' THE BUTTS, SANDPITS ROAD, RICHMOND, SURREY TW107DT

(ALL PRICES INCLUDE P&P ,V.A.T. AND FAST DELIVERY)

OVERSEAS ORDERS - ADD £1 PER TAPE TOWARDS POSTAGE

FREE CATALOGUE! SEND SAE FOR YOUR COPY - OVER 300 TITLES!

LOAD &RUN

Send your Cheques/POs (Sterling only) or stamp and address for list to:

LOAD & RUN, DEPT, ASU P.O. BOX 123 DARTFORD DA1 5AA

RING (0322) 73128 FOR ENQUIRIES

OUR POLICY FOR 1985 IS TO PROVIDE SOFTWARE THAT EVERYONE CAN AFFORD.

CASSETTE BASED GAMES

Item	RRP	Our Price
3 D Time Trek	£7.95	£6.95
Binky	£5.95	£4.45
Catastrophes	£8.95	£6.85
Chopper Squad	£5.95	£4.95
Execution	£6.95	£5.95
Fantastic Voyage	£8.95	£6.95
Gremlins	£9.95	£8.45
Master of the Lamps	£9.99	£8.95
The Scout Steps Out	£8.95	£6.85
Traffic	£8.95	£6.95
Hard Hat Mac	£9.95	£8.45
Way of Exploding Fist	£9.95	£8.45

ADVENTURE & STRATEGY

Item	RRP	Our Price
Alex Higgins Pool	£8.95	£6.95
Alex Higgins Snooker	£8.95	£6.95
Castle Black Star	£6.95	£5.95
Dun Darach	£9.95	£8.45
Jump Jet	£9.95	£8.95
Mordons Quest	£6.95	£5.95
Red Arrows	£8.95	£7.95
Red Coats	£6.95	£5.95
Red Moon	£6.95	£5.95
Ring of Darkness	£9.95	£8.95
Tripods	£11.50	£9.95
Zorakk	£6.95	£5.95

DISC ADVENTURE & STRATEGY

Item	RRP	Our Price
Alex Higgins Pool	£12.95	£10.15
Alex Higgins Snooker	£12.95	£10.15

HARDWARE

(In U.K. please remember to add the P&P in brackets)

Item	RRP	Our Price
CL1 (cas in'tfce lea	£3.95	£3.25
DL2 (664 d'drive lead)	£6.95	£5.85
LIGHT PEN (D'Kt)	£24.95	£21.95
DMP 1 PRINTER RIBBON	£6.50	£5.45
SSA1 SPEECH SYNTH. (£1)	£29.95	£25.95

TUTORIAL

Item	RRP	Our Price
Guide to Logo	£9.95	£8.95

EDUCATIONAL TAPES

Item	RRP	Our Price
Rhymeland	£5.95	£5.25
Here & There with Mr Men	£8.95	£7.95

DISC BASED UTILITIES

Item	RRP	Our Price
Font 64	£12.95	£11.55
Mastercalc	£29.95	£24.50
Pitman Typing Course	£13.95	£11.55

CASSETTE BASED UTILITIES

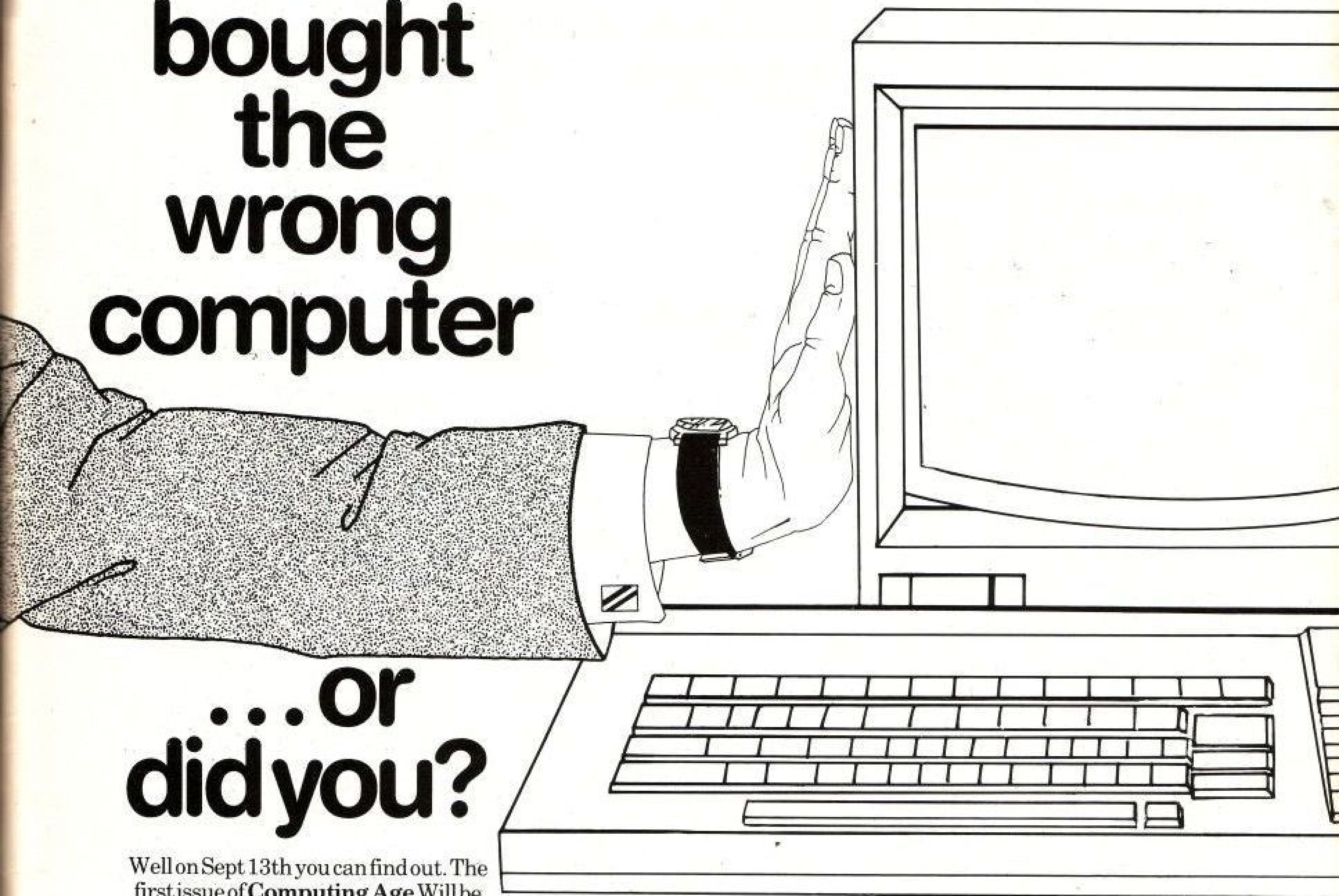
Item	RRP	Our Price
Abersoft 4th	£24.95	£21.95
Artwork (Kuma)	£9.95	£8.95
Mastercalc	£19.95	£17.45

UK: All prices include VAT and P&P in U.K. Add P&P in brackets for hardware.
For European & Overseas: All prices exclude VAT & include P&P in Europe.
Elsewhere add 50p extra for P&P hardware outside Europe add £2.50.

THIS IS ONLY A SELECTION OF NEW RELEASES AND RECENT ADDITIONS TO OUR STOCK. PLEASE RING FOR LATEST RELEASES

E.&.O.E.

You bought the wrong computer



...or did you?

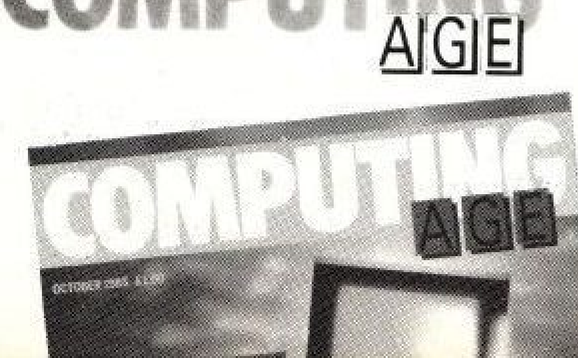
Well on Sept 13th you can find out. The first issue of **Computing Age** Will be available on the newstand. On the front will be a FREE 32 page booklet assessing the seven best new generation micros... how does your computer stack up with the best?

Computing Age is a brand new monthly magazine aimed at the serious computer enthusiast.

With the emphasis firmly on applications, new developments and strong communications coverage, the first issue explains how to log onto Telecom Gold; the incredible speed and storage possibilities of compact discs; blowing your EPROM on the BBC; a comparison of new 16 bit machines and what *NOT* to buy this Christmas.

If your serious about computing, get **Computing Age,** on sale Sept 13th. At all leading newsagents, price £1.00.

COMPUTING AGE



Get a full colour printout of your masterpiece. Copies from Modes 1 or 2. Only £2. Send prog/Screen copy on tape to: C.C.S. 14, Hiltingbury Road, Havant, Hampshire. PO9 5SE.

Programs Written to your individual needs. Also Programs converted to Amstrad Basic Phone Hoddesdon 445140

Doomsday Planet. 100% machine code adventure, with sound effects and introductory booklet. £4 + 50p postage Cheque/P.O. payable to A. Baxter, 140 Rushdale Road, Sheffield, 58 9QE

Amstrad Software for sale. Mint. Micropen and Microscript (Discs) £30.00 each Easi Amscalc (Tape) £12.00 Invostat (Tape) £14.00 Phone Roland Tippins 01-866-2742

DMP1 printer in original packing as new. £130. 0844 52426

Software for sale., Alien-8, Manic Miner, Blagger, Roland in Time, Roland in the Caves, Only £4.50 each, or will also swap phone Colin 01-504-9391 after 6pm.

Go Cube Bashing. Rubik's 3x3x3, revenge 4x4x4, simple 2x2x2, challenging 5x5x5. Fast Amstrad program. Booklet. Many features. addictive. only £4.95 tape. A. Forbes 188 Park Road, Kingston, Surrey, KT2 5LS. 01-549 9205

Wanted Amstrad Computer user Issue one any price paid D Tomlinson, 2 Owston Road, Carcroft, Doncaster, South Yorks. DN6 8DL

Amstrad Greyhound system. Forecasts complete meeting, all grades and distances. Individual race or complete meeting review plus save facilities. Send blank tape and £3.50 Brian Short, 10 Tyburn road. Wolverhampton

---

PROGRAMMED TO WIN!



Win a unique Austin Metro worth £5,500 with the October Issue of

CPC COMPUTING

Get motoring this Winter with a special edition Austin Metro. You choose the trim and fittings for a real eye-catcher. All you have to do is become our Tape Magazine Computer Champion.

We are having a two-part competition in our October and November issues.

It's easy to enter and free.

Just answer the set of computer-related questions in each competition issue and write your Tie Breaker.

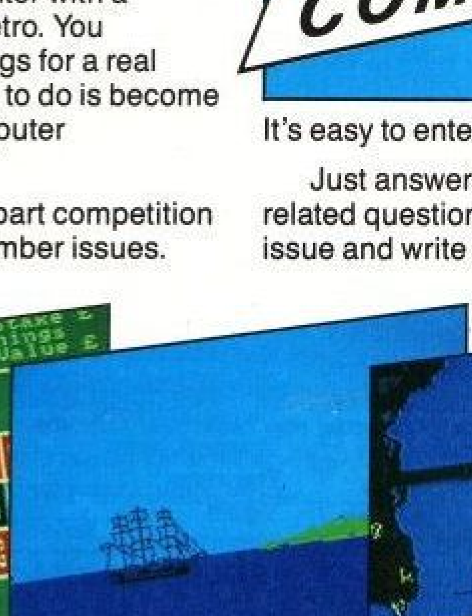
Can you make the grade and become our Computer Champion?

The competition closes on **30 November 1985.**

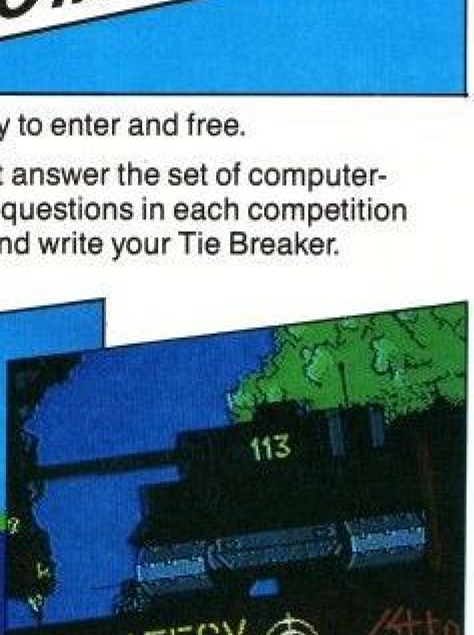
Get motoring and order your issues now... before they sell out.



ROULETTE



TREASURE ISLAND



STRATEGY SPECIAL

Argus Press Software Group

Available every month from all branches of W H Smiths, John Menzies and other leading newsagents.

Argus Tape Magazines produced by 64 Tape Computing Infonet Limited Times House 179 The Marlowes Hemel Hempstead Herts HP1 1BB

GREAT GAMES · GREAT UTILITIES · GREAT VALUE

Least Significant Bit

You lucky lot. We make no apologies for getting excited about Amstrad's new products. They are quite simply astonishing value.

Do you realise just what Amstrad's two new machines really mean. I mean really?

For those of us who have been aware of what the future holds for some time past, it's been a case of gradual enlightenment as all the ramifications (excuse pun) sink in. A complete CP/M engine with all the TPA you need to run all the famous names for under £300. And, by the way, this same machine will run getting on for over 500 games whose quality is now ranking well up with Spectrum and Commodore, despite the fact that programmers have had a couple of years less to get to grips with the hardware.

A complete Wordstar on the CPC6128 set-up for under £500. Having said that, it should be mentioned that the rising star of professional word processing is now a workalike called NewWord, by the not so well known NewStar. It uses less overlaying and has mailmerge built-in with some very powerful macro features. Plus a few extra goodies that we'll explore in more detail next month.

But hold hard. What's this - the PCW8256 comes complete with the most usable word processing package you'll ever see at a price that won't even buy you the software for many WP systems on the IBM PC. Decisions, decisions. If only Locoscript had been CP/M based, then we could play games and have a simple to use full spec word processor for the CPC6128.

The philosophy goes deeper, however, since Locomotive set out to perform magic with Locoscript that simply could not be achieved with CP/M and a CP/M LST driver controlling the printer. Those pull down menus. That multi-spilt screen scrolling. That superb user interface at the file maintenance level are definitely not of the world of CP/M -plus or otherwise. And the ease of controlling the printer's style and features is a real breakthrough for all of us who have tried to fathom control codes for installation into Wordstar and its ilk.

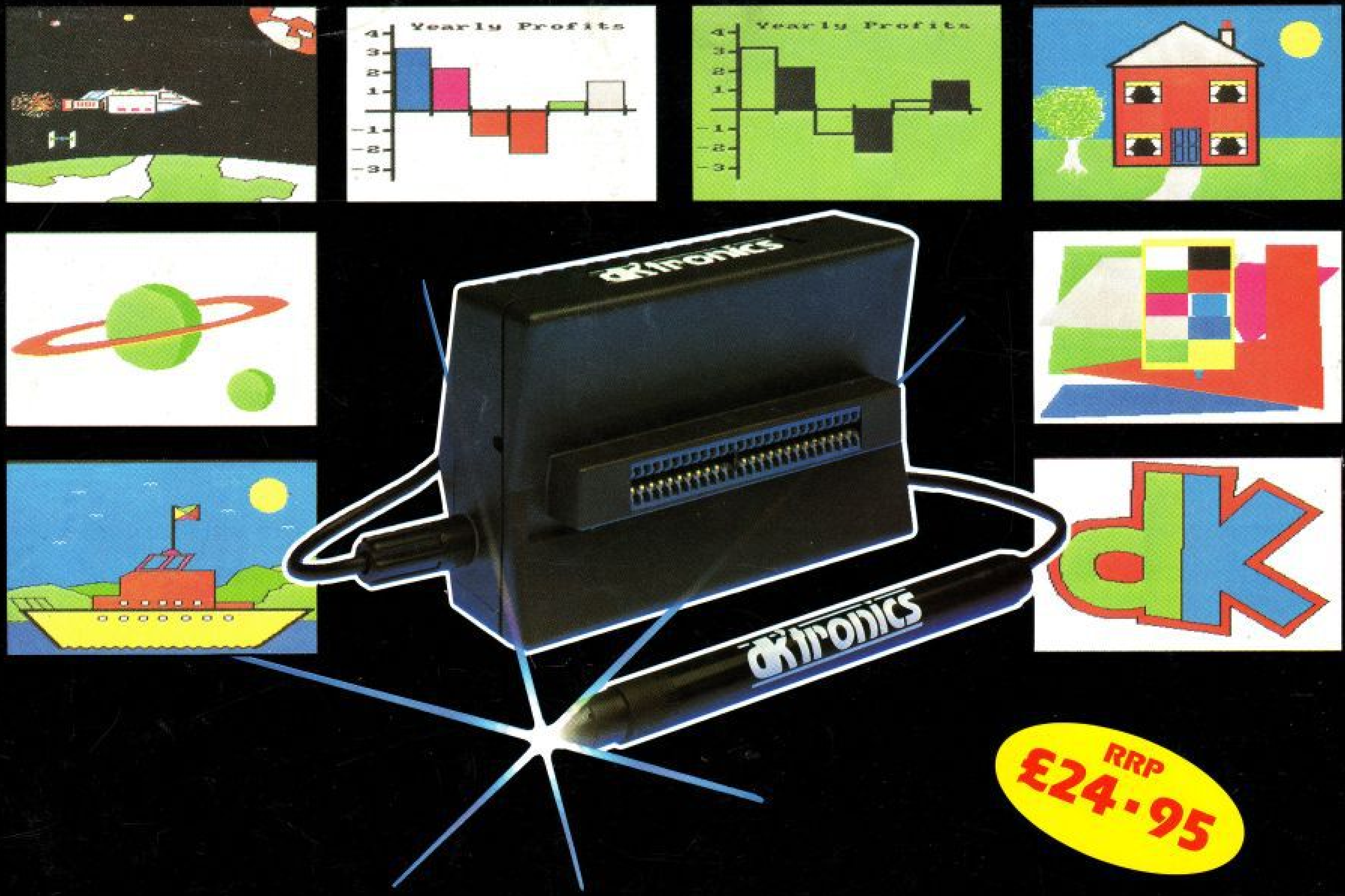
And if you've ever tried interfacing an RS232 printer, then you won't need reminding that it can be easier trying to eat jelly with a fork.

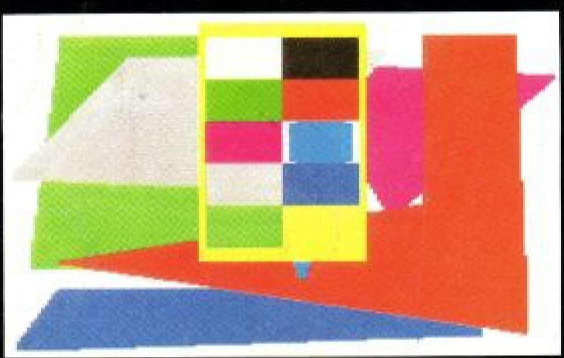
Hold on - what's this on side two of my 8256 system disc? CP/M Plus? So I can have Locoscript for the secretary, and still have my fix of the Wordstar/Newword if I really must. The best of all words.

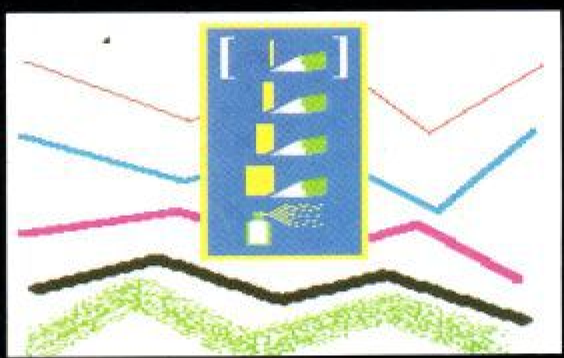
Hold hard some more! What's this? Drive m: - a memory disc no less! Some of the 256k of RAM has been partitioned as that marvel of computing that got overlooked when 16bit systems managed to find more wasteful uses for RAM. A really tight 8 bit design with memory disc under CP/M. Legend has it that it runs faster than an IBM PC on overlayed programs. Can this be true? Merciful heavens, where will it all end?

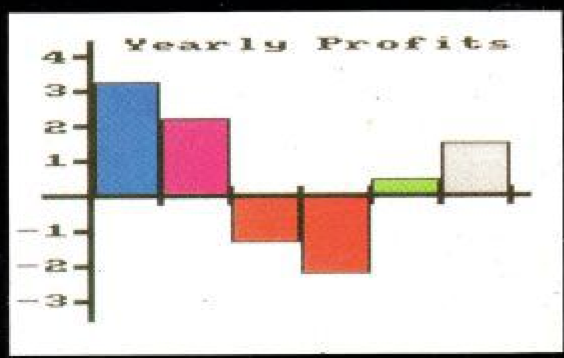
ACU

ADVERTISER'S INDEX

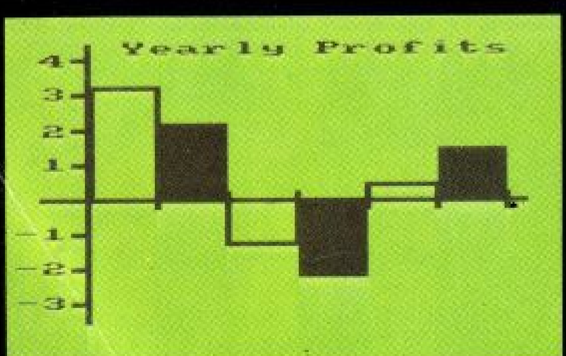



CHANGE COLOUR

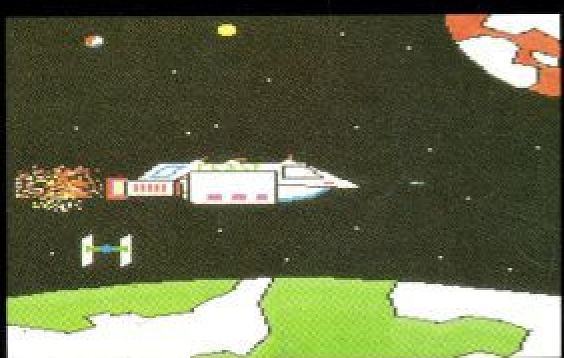

CHANGE BRUSH

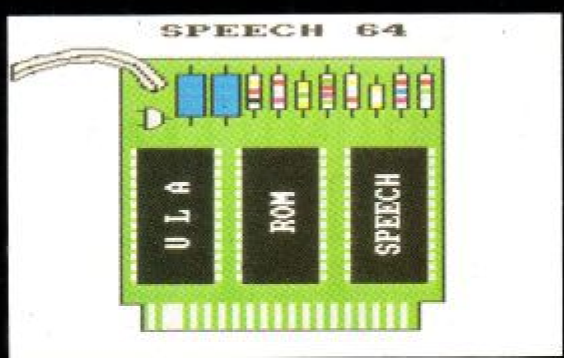


ADD TEXT



GREEN SCREEN COMPATIBLE


HIGH-RES COLOUR GRAPHICS



TECHNICAL DRAWING